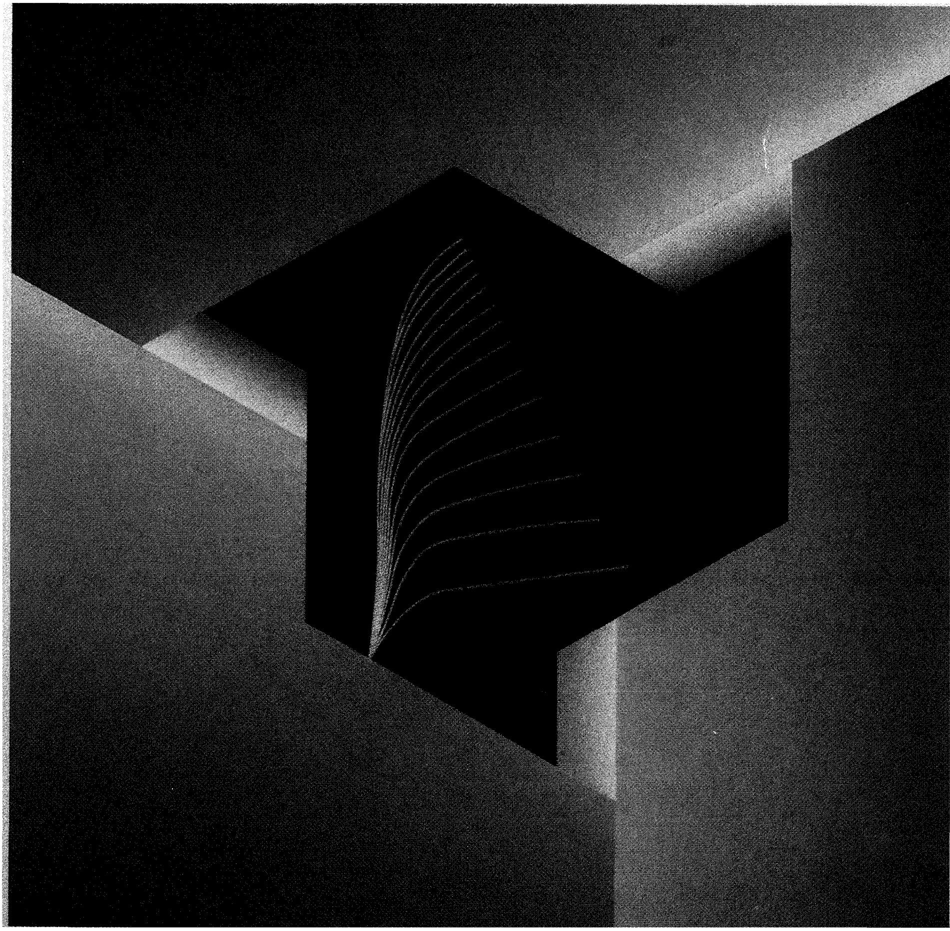
SIEMENS

Transistors for Amplifier and Switching Applications

Data Book 1988/89



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Small-Signal Transistors for Amplifier and Switching Applications

Data Book 1988/89

Siemens Aktiengesellschaft

Introduction

This data book contains the entire product spectrum of Siemens bipolar transistors for amplifier and switching applications with due regard to innovations, improvements and expansions related to this field. With this new data book previous editions are no longer applicable. Literature about transistors which are not dealt with in this data book can be ordered from your nearest Siemens Office or Representative.

Literature Selector

- Data book 1986/87 "Tuner Semiconductor Devices" (ordering code B3-B3587-X-X-7600)
- Data book 1987/88 "Discrete Semiconductors for Surface Mounting" (ordering code B3-B3497-X-X-7600)
- Data book 1987/88 "SIPMOS Components" (ordering code B3-B3508-X-X-7600)

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AF transistors

Type NPN = N PNP = P	Max. ratings V_{CBO}	I_C	P_{tot}	Characteristics at T_A = 25 °C h_{FE}	I_C	V_{CE}	I_{CBO}	V_{CEsat}	f_T	Package	Page
	V	mA	mW	—	mA	V	nA	V	MHz		
BC 167 N	50	100	500	110...450	2	5	≤15	≤0,60	200	TO 92	18
BC 168 N	30	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	18
BC 169 N	30	100	500	200...800	2	5	≤15	≤0,60	200	TO 92	18
BC 182 N	60	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	21
BC 183 N	45	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	21
BC 212 P	60	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	24
BC 213 P	45	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	24
BC 237 N	50	100	500	110...450	2	5	≤15	≤0,60	200	TO 02	27
BC 238 N	30	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	27
BC 239 N	30	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	27
BC 257 P	50	100	500	125...475	2	5	≤15	≤0,65	250	TO 92	30
BC 258 P	30	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	30
BC 259 P	25	100	500	220...800	2	5	≤15	≤0,65	250	TO 92	30
BC 307 P	50	100	500	125...475	2	5	≤15	≤0,65	250	TO 92	33
BC 308 P	30	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	33
BC 309 P	25	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	33
BC 327 P	50	800	625	100...630	100	1	≤100	≤0,70	200	TO 92	36
BC 328 P	30	800	625	100...630	100	1	≤100	≤0,70	200	TO 92	36
BC 337 N	50	800	625	100...630	100	1	≤100	≤0,70	170	TO 92	40
BC 338 N	30	800	625	100...630	100	1	≤100	≤0,70	170	TO 92	40
BC 368 N	25	1000	800	63...400	500	1	≤100	≤0,50	100	TO 92	44
BC 369 P	25	1000	800	63...400	500	1	≤100	≤0,50	100	TO 92	48
BC 413 N	45	100	500	200...800	2	5	≤15	≤0,60	200	TO 92	52
BC 414 N	50	100	500	200...800	2	5	≤15	≤0,60	200	TO 92	52
BC 415 P	45	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	55
BC 416 P	50	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	55
BC 546 N	80	100	500	100...450	2	5	≤15	≤0,60	200	TO 92	58
BC 547 N	50	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	58
BC 548 N	30	100	500	110...800	2	5	≤15	≤0,60	200	TO 92	58
BC 549 N	30	100	500	200...800	2	5	≤15	≤0,60	200	TO 92	58
BC 550 N	50	100	500	200...800	2	5	≤15	≤0,60	200	TO 92	58
BC 556 P	80	100	500	125...475	2	5	≤15	≤0,65	250	TO 92	65
BC 557 P	50	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	65
BC 558 P	30	100	500	125...800	2	5	≤15	≤0,65	250	TO 92	65
BC 559 P	30	100	500	220...800	2	5	≤15	≤0,65	250	TO 92	65
BC 560 P	50	100	500	220...475	2	5	≤15	≤0,65	250	TO 92	65
BC 635 N	45	1000	800	40...250	150	2	≤100	≤0,50	100	TO 92	72
BC 637 N	60	1000	800	40...160	150	2	≤100	≤0,50	100	TO 92	72
BC 639 N	100	1000	800	40...160	150	2	≤100	≤0,50	100	TO 92	72
BC 636 P	45	1000	800	40...250	150	2	≤100	≤0,50	100	TO 92	76
BC 638 P	60	1000	800	40...160	150	2	≤100	≤0,50	100	TO 92	76
BC 640 P	100	1000	800	40...160	150	2	≤100	≤0,50	100	TO 92	76

AF transistors

Type NPN = N PNP = P		Max. ratings V_{CBO} V	I_C mA	P_{tot} mW	Characteristics at T_A = 25 °C h_{FE} –	I_C mA	V_{CE} V	I_{CBO} nA	V_{CEsat} V	f_T MHz	Package	Page
BCX 58	N	32	100	500	120…630	2	5	≤20	≤0,5	200	TO 92	80
BCX 59	N	45	100	500	120…630	2	5	≤20	≤0,5	200	TO 92	80
BCX 73	N	60	800	625	100…630	100	1	≤20	≤0,6	170	TO 92	85
BCX 74	N	75	800	625	100…630	100	1	≤20	≤0,6	170	TO 92	85
BCX 75	P	60	800	625	100…630	100	1	≤20	≤0,6	200	TO 92	89
BCX 76	P	75	800	625	100…630	100	1	≤20	≤0,6	200	TO 92	89
BCX 78	P	32	100	500	120…630	2	5	≤20	≤0,6	250	TO 92	93
BCX 79	P	45	100	500	120…630	2	5	≤20	≤0,6	250	TO 92	93
BD 825	N	45	1000	8000	40…250	150	2	≤100	≤0,5	100	TO 202	98
BD 827	N	60	1000	8000	40…160	150	2	≤100	≤0,5	100	TO 202	98
BD 829	N	100	1000	8000	40…160	150	2	≤100	≤0,5	100	TO 202	98
BD 826	P	45	1000	8000	40…250	150	2	≤100	≤0,5	125	TO 202	101
BD 828	P	60	1000	8000	40…160	150	2	≤100	≤0,5	125	TO 202	101
BD 830	P	100	1000	8000	40…160	150	2	≤100	≤0,5	125	TO 202	101

Transistors with high reverse voltages

Type NPN = N PNP = P		Max. ratings V_{CBO} V	I_C mA	P_{tot} mW	Characteristics at T_A = 25 °C h_{FE} –	I_C mA	V_{CE} V	I_{CBO} nA	V_{CEsat} $V_{CEsatHF}$* V	f_T MHz	Package	Page
BF 420	N	300	50	830	≥50	25	20	≤10	≤20*	100	TO 92	106
BF 422	N	250	50	830	≥50	25	20	≤10	≤20*	100	TO 92	106
BF 421	P	300	50	830	≥50	25	20	≤10	≤20*	100	TO 92	110
BF 423	P	250	50	830	≥50	25	20	≤10	≤20*	100	TO 92	110
BF 857	N	160	200	1800	≥25	30	10	≤50	≤1	100	TO 202	114
BF 858	N	250	200	1800	≥25	30	10	≤50	≤1	100	TO 202	114
BF 859	N	300	200	1800	≥25	30	10	≤50	≤1	100	TO 202	114
BF 869	N	250	50	1600	≥50	25	20	≤10	≤20*	100	TO 202	118
BF 871	N	300	50	1600	≥40	25	20	≤10	≤20*	100	TO 202	118
BF 881	N	400	50	1600	≥40	25	20	≤100	≤20*	100	TO 202	118
BF 870	P	250	50	1600	≥50	25	20	≤10	≤20*	100	TO 202	122
BF 872	P	300	50	1600	≥40	25	20	≤10	≤20*	100	TO 202	122
BFP 22	N	200	200	625	≥50	30	10	≤100	≤0,5	70	TO 92	126
BFP 25	N	300	200	625	≥40	30	10	≤100	≤0,4	70	TO 92	126
BFP 23	P	200	200	625	≥50	30	10	≤100	≤0,4	70	TO 92	130
BFP 26	P	300	200	625	≥40	30	10	≤100	≤0,5	70	TO 92	130

AF darlington transistors

Type NPN = N PNP = P	Max. ratings V_{CBO} V	 I_C mA	 P_{tot} mW	Characteristics at T_A = 25 °C h_{FE} –	 I_C mA	 V_{CE} V	 I_{CBO} nA	 V_{CEsat} V	 f_T MHz	Package	Page
BC 516 P	40	500	625	≥30 000	20	2	≤100	≤1	200	TO 92	136
BC 517 N	40	500	625	≥30 000	20	2	≤100	≤1	150	TO 92	140
BC 617 N	50	500	625	≥20 000	200	5	≤100	≤1,1	150	TO 92	144
BC 618 N	80	500	625	≥10 000	200	5	≤100	≤1,1	150	TO 92	144
BC 875 N	60	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	148
BC 877 N	80	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	148
BC 879 N	100	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	148
BC 876 P	60	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	152
BC 878 P	80	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	152
BC 880 P	100	1000	800	≥2000	500	10	≤100	≤1,3	150	TO 92	152

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S	BC 167 B	Q62702-C75	18
	BC 168	Q62702-C707	18
	BC 168 A	Q62702-C76	18
	BC 168 B	Q62702-C77	18
	BC 168 C	Q62702-C78	18
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	BC 169 B	Q62702-C79	18
	BC 169 C	Q62702-C80	18
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	BC 183 C	Q62702-C524	21
	BC 212	Q62702-C242	24
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	BC 212 B	Q62702-C374-V2	24
	BC 213	Q62702-C564	24
	BC 213 A	Q62702-C1159	24
	BC 213 B	Q62702-C1160	24
	BC 213 C	Q62702-C1158	24
	BC 237	Q62702-C697	27
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	BC 238	Q62702-C698	27

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S	BC 238 C	Q62702-C280	27
	BC 239	Q62702-C699	27
	BC 239 B	Q62702-C281	27
S	BC 239 C	Q62702-C282	27
	BC 257	Q62702-C700	30
S	BC 257 A	Q62702-C184	30
S	BC 257 B	Q62702-C206	30
	BC 258	Q62702-C701	30
	BC 258 A	Q62702-C187	30
	BC 258 B	Q62702-C188	30
	BC 258 C	Q62702-C438	30
	BC 259	Q62702-C702	30
	BC 259 B	Q62702-C192	30
	BC 259 C	Q62702-C439	30
	BC 307	Q62702-C703	33
S	BC 307 A	Q62702-C283	33
S	BC 307 B	Q62702-C324	33
	BC 308	Q62702-C704	33
	BC 308 A	Q62702-C285	33
S	BC 308 B	Q62702-C286	33
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	BC 309	Q62702-C705	33
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	BC 327	Q62702-C311	36
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S = Preferred product

Index of Ordering Codes

S = Preferred product

Index of Ordering Codes

S = Preferred product

Designation Code

The "European" type code in accordance with Pro Electron uses two letters (material and application classes) for the designation of types and another three or more consecutive registration marks.

The first letter indicates the semiconductor material:

A. Germanium (or other material with a band gap of 0.6...1.0 eV)
B. Silicon (or band gap of 1.0...1.3 eV)
C. III-V material, e.g. gallium-arsenide (or band gap of more than 1.3 eV)
D. Material with a band gap of less than 0.6 eV, e.g. indium-antimony
R. Semiconductor compounds for photo and Hall-effect applications

The second letter indicates the application range:

A. Signal diode, lowest power
B. Capacitance diode
C. AF small-signal transistor, $R_{thJC} \geq 15$ K/W
D. AF power transistor, $R_{thJC} \leq 15$ K/W
E. Tunnel diode
F. RF small-signal transistor, $R_{thJC} \geq 15$ K/W
G. Components combination, array, multichip
H. Hall probe
L. RF power transistor, $R_{thJC} \leq 15$ K/W
N. Optocoupler
P. Radiation detector, e.g. photovoltaic cell
Q. Radiation emitter, e.g. LED
R. Low-power switching element with thyristor characteristic, $R_{thJC} \geq 15$ K/W
S. Low-power switching transistor, $R_{thJC} \geq 15$ K/W
T. High-power switching elements with thyristor characteristic, $R_{thJC} \leq 15$ K/W
V. High-power switching transistor, $R_{thJC} \leq 15$ K/W
X. Frequency multiplier diode
Y. Power rectifier diode
Z. Transient voltage suppressor diode, Z diode, reference element

The current registration code for components developed for entertainment electronics, consists of three digits (e.g. BC 547) whereas for components applied preferably in "industrial" electronics it comprises one letter and two digits (e.g. BCX 58).

A supplementary letter is added to the registration code in order to define a mechanical or electrical variant.

Further designations of types are possible in accordance with JEDEC code or in-house standards.

Type marking

Each component is marked with the complete type designation, the date code of manufacture (year/month in accordance with DIN 41314.1 or year/week in accordance with DIN 41314.2 or EIA, respectively) as well as the manufacturer's identification mark (§ or S). In special cases (for lack of space, special specifications, etc.) particular code signs are used.

Ordering code

The ordering code is indicated in the proper data sheet. Special designs based on particular supply contracts will be provided with an own ordering number. The ordering code for taped versions is available upon request.

Explanations of the Data Sheet Parameters

Maximum ratings

The maximum ratings specified are absolute ratings which, if exceeded, may result in the destruction or permanent functional impairment of the component. When testing the component, as for example in respect to breakdown voltages, or during application, protection is to be provided in order to reliably ensure that maximum ratings are not exceeded.

Characteristics

Typical characteristics describe the component behavior at defined operating conditions. The numerical values and diagrams pertain to the component type and shall not be considered as characteristics of an individual component. The minimum and maximum ratings stated for reasons of essential quality and application requirements describe the actual spread of the characteristics, whereas spread curves in diagrams usually specify the spread range which is to be expected. Electrical values are grouped into "static" DC values and "dynamic" AC values.

Thermal resistance

The thermal resistance characteristic is closely related to the power-handling capacity and thus grouped as upper spread value right below the maximum ratings. The maximum ratings indicated in the data sheets are determined at still air at only a low heat dissipation via the pins and apply to usual mounting methods as well.

Package values

The package values are defined by notes on standard sheets or outline drawings. The mode of packing is indicated on the data sheets only in special cases (e.g. as ordering code variant) as it is not a component-specific information.

Quality Specifications

Supply quality [2]

The quality of the supplied components means the conformance of all technical features published in this data book like maximum ratings and spread limits of the characteristics at the time of delivery.

Acceptable quality level (AQL)

Sampling inspections of the quality attributes based on AQL values are carried out in order to evaluate the acceptable quality level of delivery lots. The single sampling plans for a normal inspection serve as a basis for the inspection of the attributes. Main inspection level II in accordance with DIN 40080 (or IEC 410, MIL-STD-105D).

Classification of defects [1]

A component is considered defective if it does not comply with the characteristics specified in the data book or data sheet. The defectives are grouped according to nature and importance.

- Inoperatives (electrical or mechanical) indicate the non-operational state of a component
- Minor defects are divided into
  - total of electrical defects and
  - total of mechanical defects.

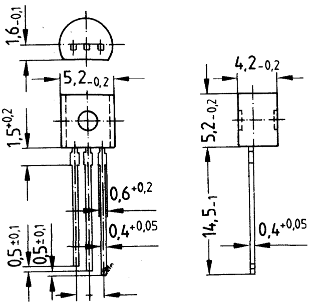
AQL table	AQL
Inoperatives (mechanical and electrical)	0.1
Σ static defectives (dc)	0.4
Dynamic defectives (ac)	1.5
Σ mechanical defectives (package and connections)	0.4

The AQL values do not indicate the actual quality of the single delivery lots but they determine the acceptance or rejection when applying the sampling plans.

In general, the average amount of defective components of a delivery lot is below the AQL values agreed upon.

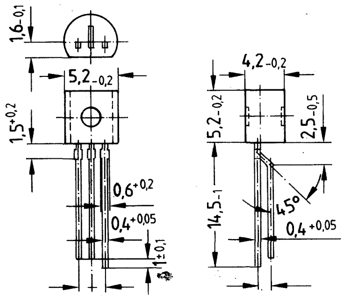
[1] Quality Terms of Electronic Components (ordering code B9-B3466-X-X-7600)
[2] Components, Assured Quality for the Benefit of the User (ordering code B9-B3583-X-X-7600)

Plastic Package TO-92 in-line



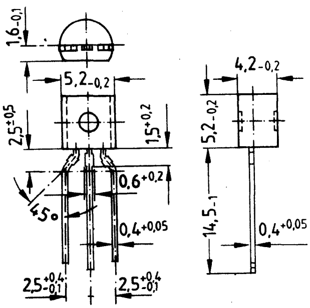
2x1.27 mm spacing

TO-92 bent



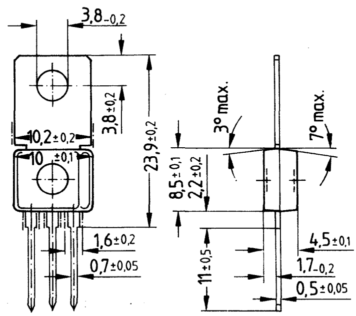
2x1.27 mm spacing 1.27 mm spacing

Plastic Package TO-92 spaced



spacing

TO-202



2.54 mm spacing

Dimensions in mm

Packing

Each packaging unit of regular deliveries is marked with information about: manufacturer, type, quantity, date and place of manufacture and lot. This information on the contents is mandatory and characterizes in full those types whose size does not permit a detailed marking. In addition, it is important for possible claims.

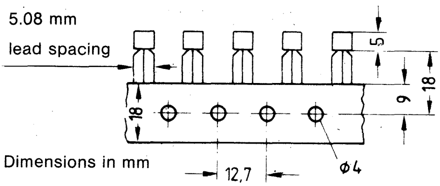
TO-202 plastic package

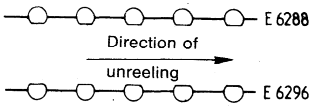
Is supplied in bulk in cardboard boxes. Packages with bent pins are available upon request.

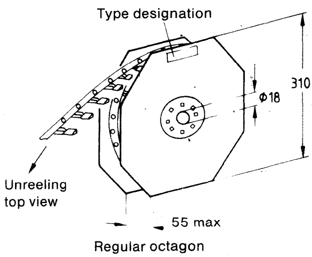
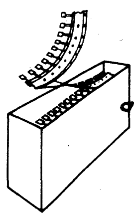
TO-92 plastic package

In addition to the bulk packing, the TO-92 package is also available on tape. For the supplementary code added to the type designation refer to the table shown below. The ordering codes are available upon request.

The tape dimensions correspond to the DIN-IEC-standard recommendations. The terminals are symmetric according to the in-line lead spacing 200 mil, spaced 5 mm apart (external terminals).





Supplementary code	Packaging unit		Cardboard box
E6288	1500 items (per reel)	3000 items (per card-board box, = 2 reels)	
E6296	1500 items (per reel)	3000 items (per card-board box, = 2 reels)	
E6325	Ammopack (placed in zigzag)	2000 items (per card-board box)	

Mechanical stress

When preparing and mounting the components, take care that the parts are free from mechanical tensions; especially endangered is the fixing of the pins in the package, the loosening of which may lead to a failure of the components.

- For the bending process, the pins should be relieved between bending point and package in order to avoid mechanical stress between package and connecting point. Do not bend pins directly at the package.
- Terminal strips should not be bent in the mounting plane.
- Avoid repeated bendings at the same point.

Soldering

Prior to soldering, the component must be fixed to the PCB free from distortion.

During the process of soldering, the components must not be exposed to an unpermissibly high temperature-time load. The corresponding information is given in the following table.

Permissible soldering conditions

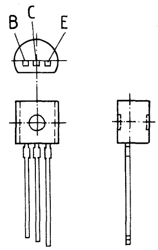
Free length of connection		0.5 mm	1.5 mm	5 mm
Soldering temperature:	245 °C	4 s	5 s	10 s
Soldering temperature:	260 °C	3 s	5 s	5 s
Iron soldering:	300 °C	2.5 s	3 s	5 s

AF Transistors

NPN Silicon AF Transistors

BC 167
...BC 169

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 257, BC 258, BC 259 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BC 167	Q62702–C706	BC 168	C62702–C707	BC 169	Q62702–C708
S BC 167 A	Q62702–C74	BC 168 A	Q62702–C76	BC 169 B	Q62702–C79
S BC 167 B	Q62702–C75	BC 168 B	Q62702–C77	BC 169 C	Q62702–C80
		BC 168 C	Q62702–C78		

Maximum Ratings

Description	Symbol	BC 167	BC 168	BC 169	Unit
Collector-emitter voltage	V_{CEO}	45	20	20	V
Collector-base voltage	V_{CBO}	50	30	30	V
Emitter-base voltage	V_{EBO}	6	5	5	V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65…+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤250		K/W
junction – case	R_{thJC}		≤150		K/W

Electrical Characteristics

at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 167		45	–	–	V
BC 168		20	–	–	V
BC 169		20	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$				
BC 167		50	–	–	V
BC 168		30	–	–	V
BC 169		30	–	–	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$				
$I_E = 1\ \mu A$ BC 167		6	–	–	V
BC 168, BC 169		5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain	h_{FE}				
$I_C = 10\ \mu A$; $V_{CE} = 5$ V					
BC 167 A, BC 168 A		–	90	–	–
BC 167 B, BC 168 B, BC 169 B		–	150	–	–
BC 168 C, BC 169 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 167 A, BC 168 A		110	180	220	–
BC 167 B, BC 168 B, BC 169 B		220	290	450	–
BC 168 C, BC 169 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	90	250	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	200	600	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	900	–	mV
Base-emitter voltage	$V_{BE\,(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		580	660	700	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	770	mV

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

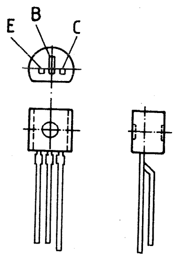
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 167 A, BC 168 A BC 167 B, BC 168 B, BC 169 B BC 168 C, BC 169 C	h_{11e}	– – –	2,7 4,5 8,7	– – –	kΩ kΩ kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 167 A, BC 168 A BC 167 B, BC 168 B, BC 169 B BC 168 C, BC 169 C	h_{12e}	– – –	1,5 2 3	– – –	10^{-4} 10^{-4} 10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 167 A, BC 168 A BC 167 B, BC 168 B, BC 169 B BC 168 C, BC 169 C	h_{21e}	– – –	200 330 600	– – –	– – –
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 167 A, BC 168 A BC 167 B, BC 168 B, BC 169 B BC 168 C, BC 169 C	h_{22e}	– – –	18 30 60	– – –	µS µS µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz BC 167, BC 168 BC 169	F	– –	2 1	– 4	dB dB

For **characteristic curves** refer to BC 546...BC 550

NPN Silicon AF Transistors

BC 182
BC 183

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 212, BC 213 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 182	Q62702-C455	BC 183	Q62702-C833
BC 182 A	Q62702-C372	BC 183 A	Q62702-C388
BC 182 B	Q62702-C373	BC 183 B	Q62702-C387
		BC 183 C	Q62702-C524

Maximum Ratings

Description	Symbol	BC 182	BC 183	Unit
Collector-emitter voltage	V_{CEO}	50	30	V
Collector-base voltage	V_{CBO}	60	45	V
Emitter-base voltage	V_{EBO}	6		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Peak emitter current	I_{EM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

Electrical Characteristics

at T_A = 25 °C, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage I_C = 2 mA	$V_{(BR)CEO}$				
BC 182		50	–	–	V
BC 183		30	–	–	V
Collector-base breakdown voltage I_C = 10 μA	$V_{(BR)CBO}$				
BC 182		60	–	–	V
BC 183		45	–	–	V
Emitter-base breakdown voltage I_E = 1 μA	$V_{(BR)EBO}$	6	–	–	V
Collector cutoff current	I_{CBO}				
V_{CB} = 50 V		–	–	15	nA
V_{CB} = 50 V, T_A = 150 °C		–	–	4	μA
DC current gain I_C = 10 μA; V_{CE} = 5 V	h_{FE}				
BC 182 A, BC 183 A		–	90	–	–
BC 182 B, BC 183 B		–	150	–	–
BC 183 C		–	270	–	–
I_C = 2 mA; V_{CE} = 5 V					
BC 182 A, BC 183 A		110	180	220	–
BC 182 B, BC 183 B		200	290	450	–
BC 183 C		420	520	800	–
Collector-emitter saturation voltage¹)	V_{CEsat}				
I_C = 10 mA; I_B = 0,5 mA		–	75	250	mV
I_C = 100 mA; I_B = 5 mA		–	200	600	mV
Base-emitter saturation voltage¹)	V_{BEsat}				
I_C = 10 mA; I_B = 0,5 mA		–	700	–	mV
I_C = 100 mA; I_B = 5 mA		–	900	–	mV
Base-emitter voltage	$V_{BE(on)}$				
I_C = 2 mA; V_{CE} = 5 V		580	660	700	mV
I_C = 10 mA; V_{CE} = 5 V		–	–	770	mV

¹) Pulse test: $t \leq 300$ μs, $D \leq 2\%$

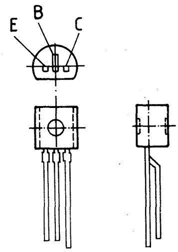
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 182 A, BC 183 A		–	2,7	–	kΩ
BC 182 B, BC 183 B		–	4,5	–	kΩ
BC 183 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 182 A, BC 183 A		–	1,5	–	10^{-4}
BC 182 B, BC 183 B		–	2	–	10^{-4}
BC 183 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 182 A, BC 183 A		–	200	–	–
BC 182 B, BC 183 B		–	330	–	–
BC 183 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 182 A, BC 183 A		–	18	–	µS
BC 182 B, BC 183 B		–	30	–	µS
BC 183 C		–	60	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	2	–	dB

For **characteristic curves** refer to BC 546...BC 550

PNP Silicon AF Transistors

BC 212
BC 213

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 182, BC 183 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Cordering code
BC 212	Q62702–C242	BC 213	Q62702–C564
BC 212 A	Q62702–C374–V1	BC 213 A	Q62702–C1159
BC 212 B	Q62702–C374–V2	BC 213 B	Q62702–C1160
		BC 213 C	Q62702–C1158

Maximum Ratings

Description	Symbol	BC 212	BC 213	Unit
Collector-emitter voltage	V_{CEO}	50	30	V
Collector-base voltage	V_{CBO}	60	45	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Peak emitter current	I_{EM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	–65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

Electrical Characteristics

at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 212		50	–	–	V
BC 213		30	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$				
BC 212		60	–	–	V
BC 213		45	–	–	V
Emitter-base breakdown voltage $I_E = 1\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain $I_C = 10\ \mu A$; $V_{CE} = 5$ V	h_{FE}				
BC 212 A, BC 213 A		–	90	–	–
BC 212 B, BC 213 B		–	150	–	–
BC 213 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 212 A, BC 213 A		125	180	250	–
BC 212 B, BC 213 B		220	290	475	–
BC 213 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	75	300	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	250	650	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	930	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		600	650	750	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	820	mV

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

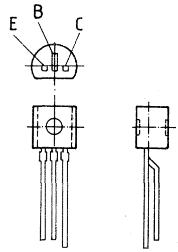
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	4	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	10	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 212 A, BC 213 A		–	2,7	–	kΩ
BC 212 B, BC 213 B		–	4,5	–	kΩ
BC 213 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 212 A, BC 213 A		–	1,5	–	10^{-4}
BC 212 B, BC 213 B		–	2	–	10^{-4}
BC 213 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 212 A, BC 213 A		–	200	–	–
BC 212 B, BC 213 B		–	330	–	–
BC 213 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 212 A, BC 213 A		–	18	–	µS
BC 212 B, BC 213 B		–	30	–	µS
BC 213 C		–	60	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	2	–	dB

For **characteristic curves** refer to BC 556...BC 560

NPN Silicon AF Transistors

BC 237 ...BC 239

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 307, BC 308, BC 309 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BC 237	Q62702-C697	BC 238	Q62702-C698	BC 239	Q62702-C699
S BC 237 A	Q62702-C276	BC 238 A	Q62702-C278	BC 239 B	Q62702-C281
S BC 237 B	Q62702-C277	S BC 238 B	Q62702-C279	S BC 239 C	Q62702-C282
		S BC 238 C	Q62702-C280		

Maximum Ratings

Description	Symbol	BC 237	BC 238	BC 239	Unit
Collector-emitter voltage	V_{CEO}	45	20	20	V
Collector-base voltage	V_{CBO}	50	30	30	V
Emitter-base voltage	V_{EBO}	6	5	5	V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Peak emitter current	I_{EM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤ 250		K/W
junction – case	R_{thJC}		≤ 150		K/W

Electrical Characteristics

at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				
$I_C = 2$ mA					
BC 237		45	–	–	V
BC 238		20	–	–	V
BC 239		20	–	–	V
Collector-base-breakdown voltage	$V_{(BR)CBO}$				
$I_C = 10\ \mu A$					
BC 237		50	–	–	V
BC 238		30	–	–	V
BC 239		30	–	–	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$				
$I_E = 1\ \mu A$ BC 237		6	–	–	V
BC 238, BC 239		5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 50$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
$V_{CB} = 50$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain	h_{FE}				
$I_C = 10\ \mu A$; $V_{CE} = 5$ V					
BC 237 A, BC 238 A		–	90	–	–
BC 237 B, BC 238 B, BC 239 B		–	150	–	–
BC 238 C, BC 239 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 237 A, BC 238 A, BC 239 A		110	180	220	–
BC 237 B, BC 238 B, BC 239 B		200	290	450	–
BC 238 C, BC 239 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	90	250	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	200	600	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	900	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		580	660	700	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	770	mV

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

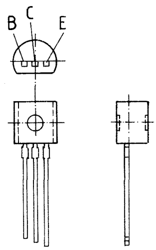
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 237 A, BC 238 A		–	2,7	–	kΩ
BC 237 B, BC 238 B, BC 239 B		–	4,5	–	kΩ
BC 238 C, BC 239 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 237 A, BC 238 A		–	1,5	–	10^{-4}
BC 237 B, BC 238 B, BC 239 B		–	2	–	10^{-4}
BC 238 C, BC 239 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 237 A, BC 238 A		–	200	–	–
BC 237 B, BC 238 B, BC 239 B		–	330	–	–
BC 238 C, BC 239 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 237 A, BC 238 A		–	18	–	µS
BC 237 B, BC 238 B, BC 239 B		–	30	–	µS
BC 238 C, BC 239 C		–	60	–	µS
Noise figure	F				
$I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz BC 239		–	1,2	4	dB
$I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz BC 237, BC 238		–	2	–	dB

For **characteristic curves** refer to BC 546...BC 550

PNP Silicon AF Transistors

BC 257 ...BC 259

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 167, BC 168, BC 169 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BC 257	Q62702-C700	BC 258	Q62702-C701	BC 259	Q62702-C702
S BC 257 A	Q62702-C184	BC 258 A	Q62702-C187	BC 259 B	Q62702-C192
S BC 257 B	Q62702-C206	BC 258 B	Q62702-C188	BC 259 C	Q62702-C439
		BC 258 C	Q62702-C438		

Maximum Ratings

Description	Symbol	BC 257	BC 258	BC 259	Unit
Collector-emitter voltage	V_{CEO}	45	25	20	V
Collector-base voltage	V_{CBO}	50	30	25	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Peak emitter current	I_{EM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤250		K/W
junction – case	R_{thJC}		≤150		K/W

Electrical Characteristics

at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 257		45	–	–	V
BC 258		25	–	–	V
BC 259		20	–	–	V
Collector-base breakdown voltage $I_C = 10$ µA	$V_{(BR)CBO}$				
BC 257		50	–	–	V
BC 258		30	–	–	V
BC 259		25	–	–	V
Emitter-base breakdown voltage $I_E = 1$ µA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain	h_{FE}				
$I_C = 10$ µA; $V_{CE} = 5$ V					
BC 257 A, BC 258 A		–	90	–	–
BC 257 B, BC 258 B, BC 259 B		–	150	–	–
BC 258 C, BC 259 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 257 A, BC 258 A		125	180	250	–
BC 257 B, BC 258 B, BC 259 B		220	290	475	–
BC 258 C, BC 259 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	75	300	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	250	650	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	930	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		600	650	750	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	820	mV

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

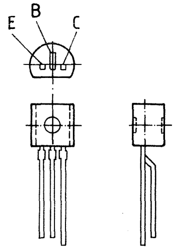
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	4	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	10	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 257 A, BC 258 A		–	2,7	–	kΩ
BC 257 B, BC 258 B, BC 259 B		–	4,5	–	kΩ
BC 258 C, BC 259 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 257 A, BC 258 A		–	1,5	–	10^{-4}
BC 257 B, BC 258 B, BC 259 B		–	2	–	10^{-4}
BC 258 C, BC 259 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 257 A, BC 258 A		–	200	–	–
BC 257 B, BC 258 B, BC 259 B		–	330	–	–
BC 258 C, BC 259 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 257 A, BC 258 A		–	18	–	μS
BC 257 B, BC 258 B, BC 259 B		–	30	–	μS
BC 258 C, BC 259 C		–	60	–	μS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F				
BC 257, BC 258		–	2	–	dB
BC 259		–	1	4	dB

For **characteristic curves** refer to BC 556...BC 560

PNP Silicon AF Transistors

BC 307 ...BC 309

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 237, BC 238, BC 239 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BC 307	Q62702-C703	BC 308	Q62702-C704	BC 309	Q62702-C705
S BC 307 A	Q62702-C283	BC 308 A	Q62702-C285	BC 309 B	Q62702-C289
S BC 307 B	Q62702-C324	S BC 308 B	Q62702-C286	BC 309 C	Q62702-C323
		S BC 308 C	Q62702-C393		

Maximum Ratings

Description	Symbol	BC 307	BC 308	BC 309	Unit
Collector-emitter voltage	V_{CEO}	45	25	20	V
Collector-base voltage	V_{CBO}	50	30	25	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Peak emitter current	I_{EM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤250		K/W
junction – case	R_{thJC}		≤150		K/W

Electrical Characteristics

at T_A = 25 °C, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 307		45	–	–	V
BC 308		25	–	–	V
BC 309		20	–	–	V
Collector-base breakdown voltage $I_C = 10$ µA	$V_{(BR)CBO}$				
BC 307		50	–	–	V
BC 308		30	–	–	V
BC 309		25	–	–	V
Emitter-base breakdown voltage $I_E = 1$ µA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 50$ V BC 307		–	–	15	nA
$V_{CB} = 30$ V BC 308		–	–	15	nA
$V_{CB} = 25$ V BC 309		–	–	15	nA
$V_{CB} = 50$ V, $T_A = 150$ °C BC 307		–	–	4	µA
$V_{CB} = 30$ V, $T_A = 150$ °C BC 308		–	–	4	µA
$V_{CB} = 25$ V, $T_A = 150$ °C BC 309		–	–	4	µA
DC current gain $I_C = 10$ µA; $V_{CE} = 5$ V	h_{FE}				
BC 307 A, BC 308 A		–	90	–	–
BC 307 B, BC 308 B, BC 309 B		–	150	–	–
BC 308 C, BC 309 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 307 A, BC 308 A, BC 309 A		125	180	250	–
BC 307 B, BC 308 B, BC 309 B		220	290	475	–
BC 308 C, BC 309 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	75	300	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	250	650	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	930	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		600	650	750	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	820	mV

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2$%

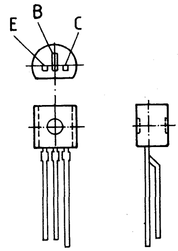
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	4	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	10	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 307 A, BC 308 A		–	2,7	–	kΩ
BC 307 B, BC 308 B, BC 309 B		–	4,5	–	kΩ
BC 308 C, BC 309 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 307 A, BC 308 A		–	1,5	–	10^{-4}
BC 307 B, BC 308 B, BC 309 B		–	2	–	10^{-4}
BC 308 C, BC 309 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 307 A, BC 308 A		–	200	–	–
BC 307 B, BC 308 B, BC 309 B		–	330	–	–
BC 308 C, BC 309 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 307 A, BC 308 A		–	18	–	µS
BC 307 B, BC 308 B, BC 309 B		–	30	–	µS
BC 308 C, BC 309 C		–	60	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ	F				
$f = 1$ kHz, $\Delta f = 200$ Hz BC 309		–	1	4	dB
BC 307, BC 308		–	2	–	dB

For **characteristic curves** refer to BC 556...BC 560

PNP Silicon AF Transistors

BC 327
BC 328

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 337, BC 338 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 327	Q62702-C311	BC 328	Q62702-C312
S BC 327-16	Q62702-C311-V3	BC 328-16	Q62702-C312-V3
S BC 327-25	Q62702-C311-V4	S BC 328-25	Q62702-C312-V4
S BC 327-40	Q62702-C311-V2	S BC 328-40	Q62702-C312-V2

Maximum Ratings

Description	Symbol	BC 327	BC 328	Unit
Collector-emitter voltage	V_{CEO}	45	25	V
Collector-base voltage	V_{CBO}	50	30	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤ 200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

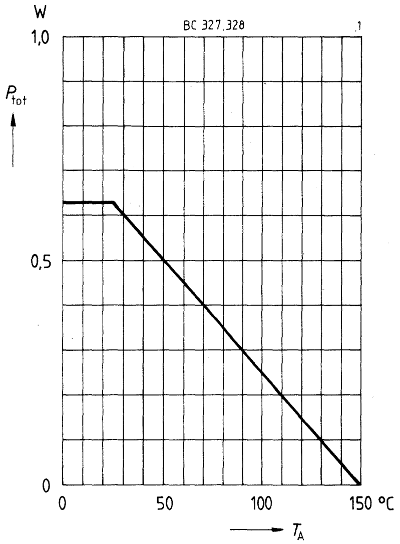
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$				
BC 327		45	–	–	V
BC 328		25	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CBO}$				
BC 327		50	–	–	V
BC 328		30	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 25$ V BC 327		–	–	100	nA
$V_{CB} = 45$ V BC 328		–	–	100	nA
$V_{CB} = 25$ V, $T_A = 150\,°C$ BC 327		–	–	10	µA
$V_{CB} = 45$ V, $T_A = 150\,°C$ BC 328		–	–	10	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain[1] $I_C = 100$ mA; $V_{CE} = 1$ V	h_{FE}				
BC 327/16; BC 328/16		100	160	250	–
BC 327/25; BC 328/25		160	250	400	–
BC 327/40; BC 328/40		250	350	630	–
$I_C = 300$ mA; $V_{CE} = 1$ V					
BC 327/16; BC 328/16		60	–	–	–
BC 327/25; BC 328/25		100	–	–	–
BC 327/40; BC 328/40		170	–	–	–
Collector-emitter saturation voltage[1] $I_C = 500$ mA; $I_B = 50$ mA	V_{CEsat}	–	–	0,7	V
Base-emitter saturation voltage[1] $I_C = 500$ mA; $I_B = 50$ mA	V_{BEsat}	–	–	2	V

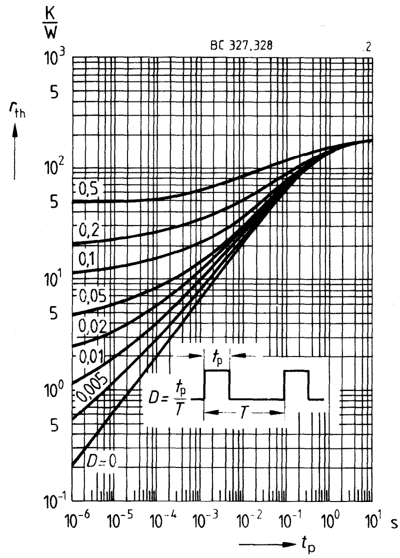
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	12	–	pF
Input capacitance $V_{EB} = 0,5$ V, $f = 1$ MHz	C_{ib}	–	60	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

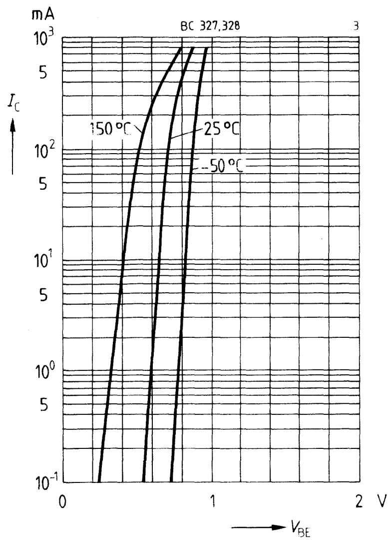
Total power dissipation $P_{tot} = f\ (T_A)$



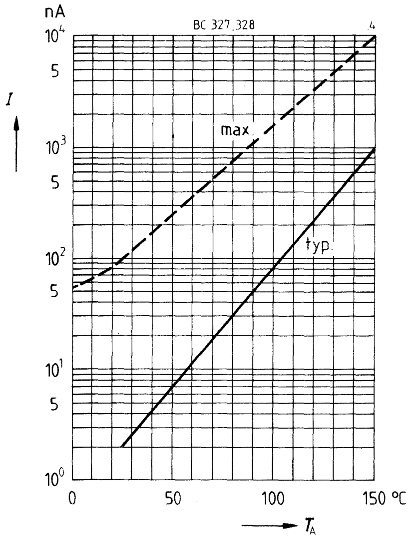
Pulse handling capability $r_{th} = f\ (t_p)$



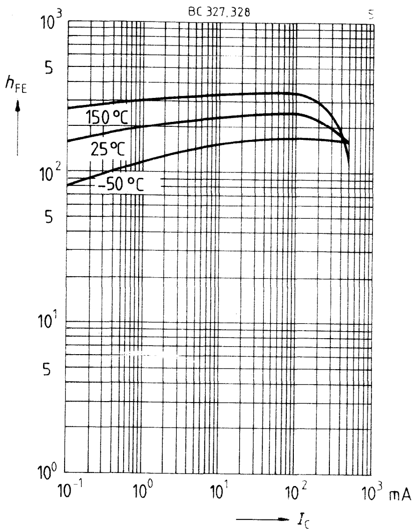
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 1$ V



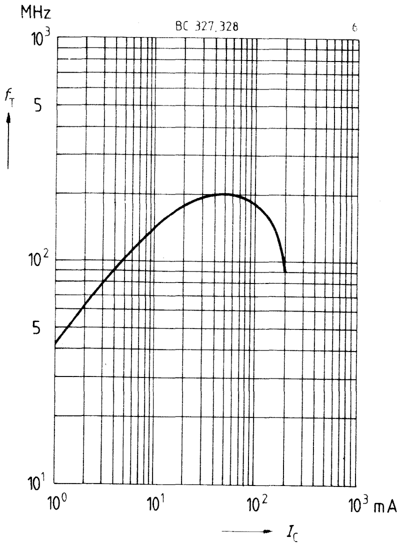
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 45$ V



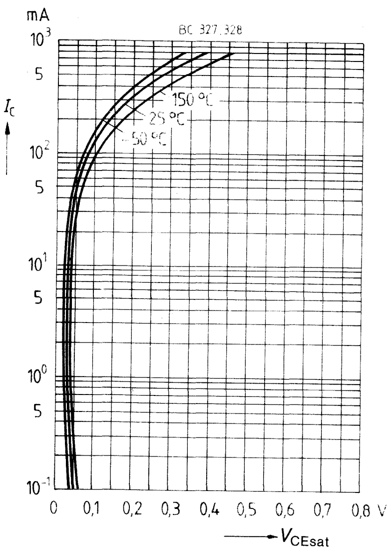
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 1$ V



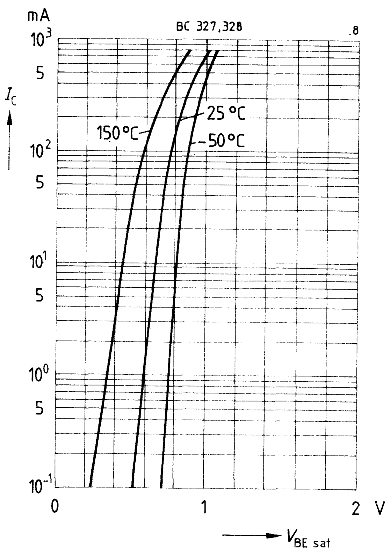
Transition frequency $f_T = f\ (I_C)$
$f = 20$ MHz, $T_A = 25$ °C



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$



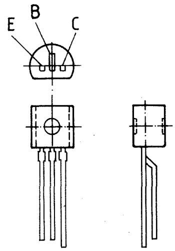
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 10$



NPN Silicon AF Transistors

BC 337
BC 338

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 327, BC 328 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 337	Q62702-C313	BC 338	Q62702-C314
S BC 337-16	Q62702-C313-V3	BC 338-16	Q62702-C314-V1
S BC 337-25	Q62702-C313-V1	S BC 338-25	Q62702-C314-V2
S BC 337-40	Q62702-C313-V2	S BC 338-40	Q62702-C314-V3

Maximum Ratings

Description	Symbol	BC 337	BC 338	Unit
Collector-emitter voltage	V_{CEO}	45	25	V
Collector-base voltage	V_{CBO}	50	30	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65…+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

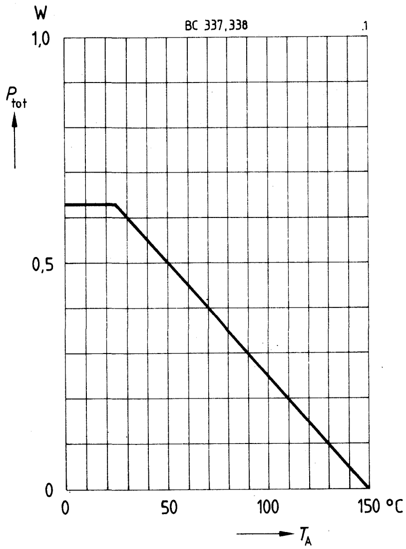
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA		$V_{(BR)CEO}$				
	BC 337		45	–	–	V
	BC 338		25	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$		$V_{(BR)CBO}$				
	BC 337		50	–	–	V
	BC 338		30	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$		$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 25$ V	BC 337		–	–	100	nA
$V_{CB} = 45$ V	BC 338		–	–	100	nA
$V_{CB} = 25$ V, $T_A = 150\,°C$	BC 337		–	–	10	μA
$V_{CB} = 45$ V, $T_A = 150\,°C$	BC 338		–	–	10	μA
Emitter cutoff current $V_{EB} = 4$ V		I_{EBO}	–	–	100	nA
DC current gain[1]) $I_C = 100$ mA; $V_{CE} = 1$ V		h_{FE}				
	BC 337/16; BC 338/16		100	160	250	–
	BC 337/25; BC 338/25		160	250	400	–
	BC 337/40; BC 338/40		250	350	630	–
$I_C = 300$ mA; $V_{CE} = 1$ V						
	BC 337/16; BC 338/16		60	–	–	–
	BC 337/25; BC 338/25		100	–	–	–
	BC 337/40; BC 338/40		170	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 500$ mA; $I_B = 50$ mA		V_{CEsat}	–	–	0,7	V
Base-emitter saturation voltage $I_C = 500$ mA; $I_B = 50$ mA		V_{BEsat}	–	–	2	V

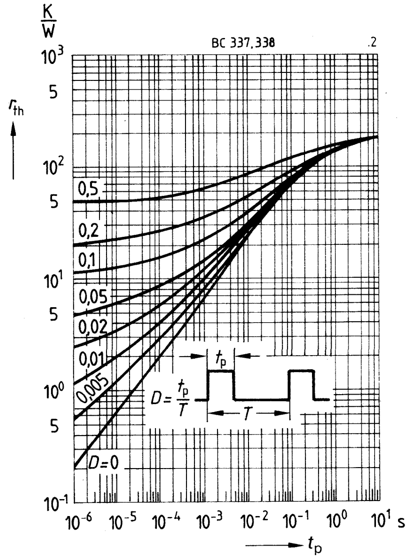
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	170	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	8	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	60	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

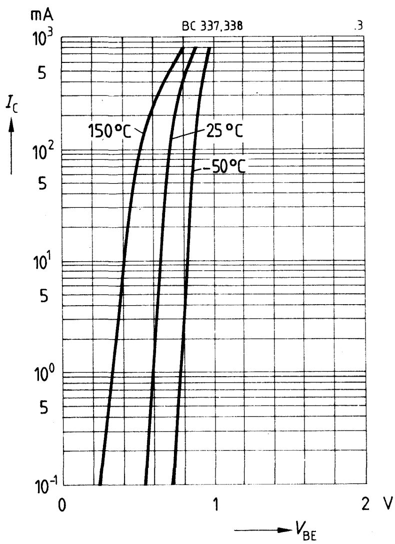
Total power dissipation $P_{tot} = f\ T_A)$



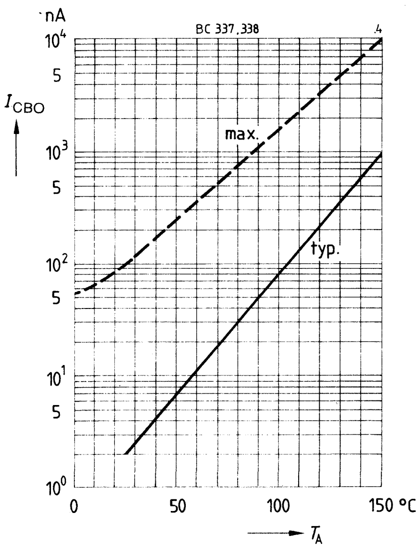
Pulse handling capability $r_{th} = f\ (t_p)$



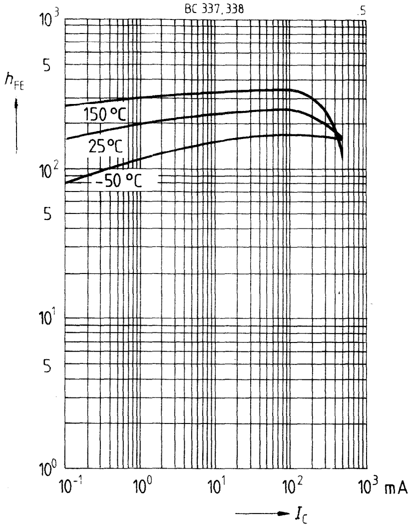
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 1\ V$



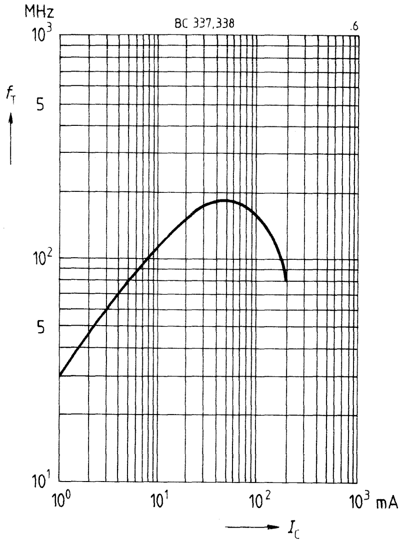
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 45\ V$



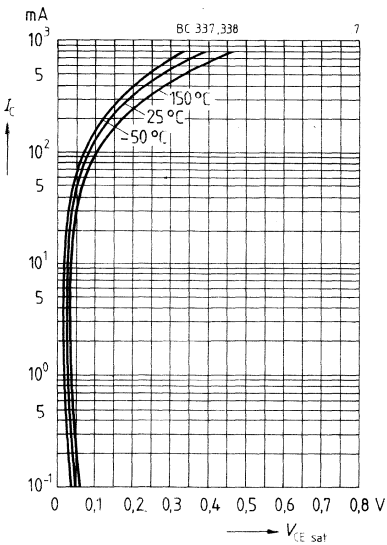
DC current gain $h_{FE} = f\,(I_C)$
$V_{CE} = 1$ V



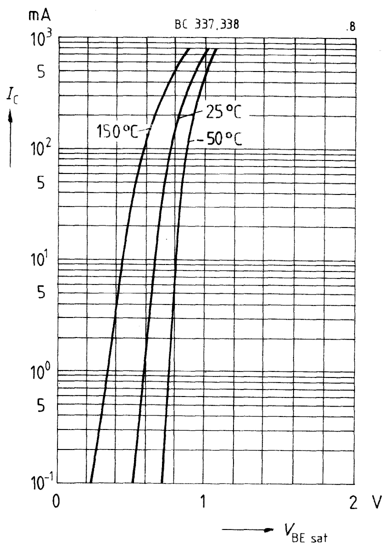
Transition frequency $f_T = f\,(I_C)$
$f = 20$ MHz, $T_A = 25$ °C



Collector-emitter saturation voltage $V_{CEsat} = f\,(I_C)$
$h_{FE} = 10$

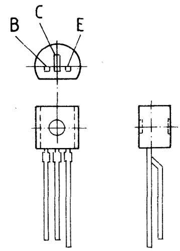


Base-emitter saturation voltage $V_{BEsat} = f\,(I_C)$
$h_{FE} = 10$



NPN Silicon AF Transistors

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary type: BC 369 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code
S BC 368	C62702–C747

Maximum Ratings

Description	Symbol	BC 368	Unit
Collector-emitter voltage	V_{CEO}	20	V
Collector-base voltage	V_{CBO}	25	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	1	A
Peak collector current	I_{CM}	2	A
Base current	I_B	100	mA
Peak base current	I_{BM}	200	mA
Total power dissipation $T_A = 25\,°C$ [1]	P_{tot}	0,8 (1)	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65...+150	°C
Thermal resistance			
junction – ambient [1]	R_{thJA}	≤156	K/W
junction – case	R_{thJC}	≤ 60	K/W

[1] If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, $R_{thJA} = 125$ K/W and thus $P_{tot\,max} = 1$ W at $T_A = 25\,°C$.

Electrical Characteristics

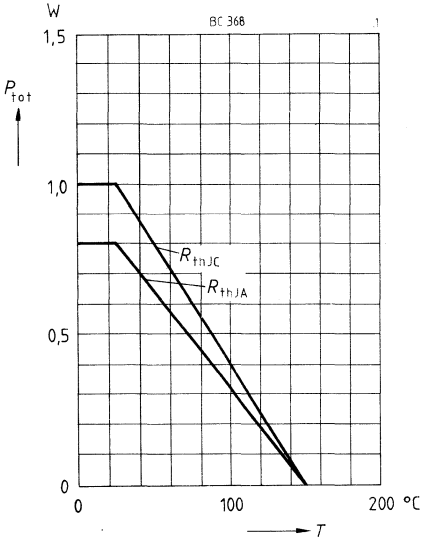
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 30$ mA	$V_{(BR)CEO}$	20	–	–	V
Collector-base-breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$	25	–	–	V
Emitter-base breakdown voltage $I_E = 1\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CB} = 25$ V $V_{CB} = 25$ V, $T_A = 150\,°C$	I_{CBO}	 – –	 – –	 100 10	 nA µA
Emitter cutoff current $V_{EB} = 5$ V	I_{EBO}	–	–	10	µA
DC current gain $I_C = 5$ mA; $V_{CE} = 10$ V $I_C = 500$ mA; $V_{CE} = 1$ V [1] $I_C = 1$ A; $V_{CE} = 1$ V [1]	h_{FE}	 50 63 60	 – 160 –	 – 400 –	 – – –
Collector-emitter saturation voltage [1] $I_C = 1$ A; $I_B = 100$ mA	V_{CEsat}	–	–	0,5	V
Base-emitter voltage [1] $I_C = 5$ mA; $V_{CE} = 10$ V $I_C = 1$ A; $V_{CE} = 1$ V	V_{BE}	 – –	 0,6 –	 – 1	 V V

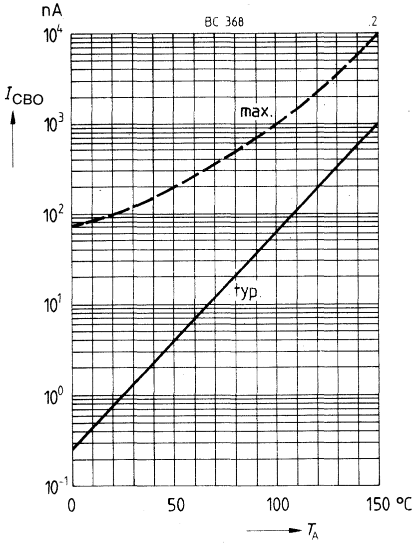
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 100$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	100	–	MHz

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

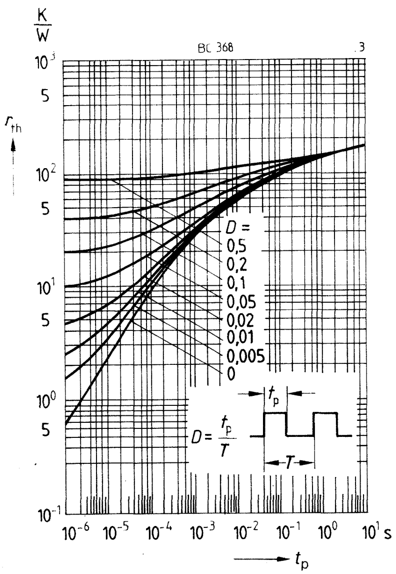
Total power dissipation $P_{tot} = f\ (T)$



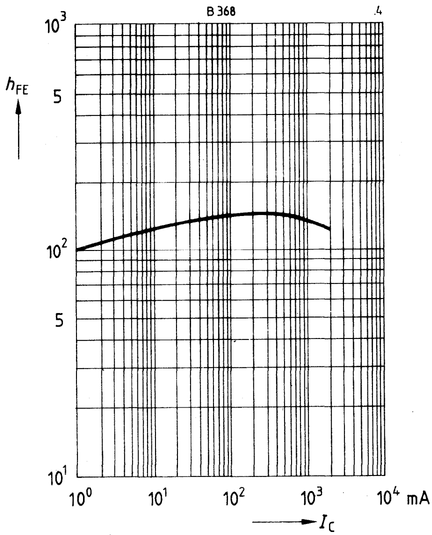
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 25$ V



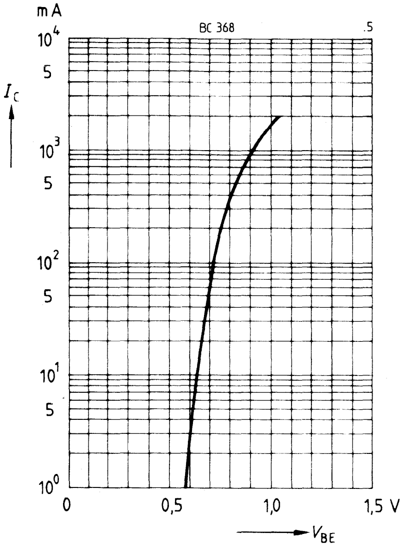
Pulse handling capability $r_{th} = f\ (t_p)$



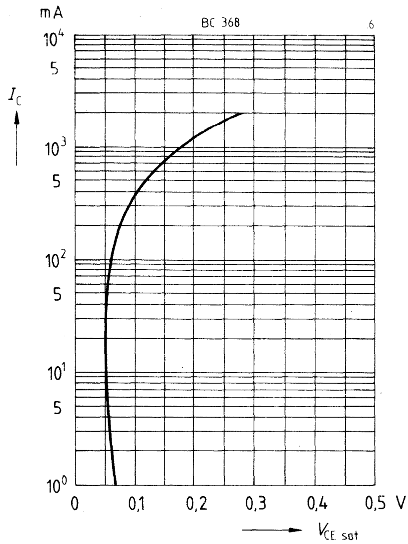
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 1$ V, $T_A = 25$ °C



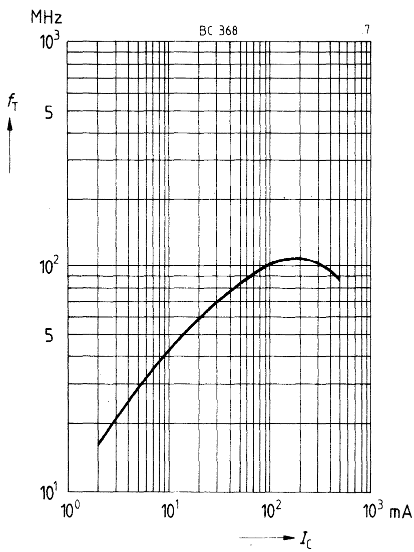
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 1$ V



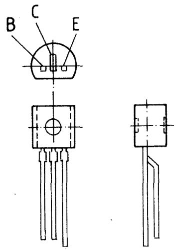
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$, $T_A = 25$ °C



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 20$ MHz



- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary type: BC 368 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code
BC 369	C62702–C748

Maximum Ratings

Description	Symbol	BC 369	Unit
Collector-emitter voltage	V_{CEO}	20	V
Collector-base voltage	V_{CBO}	25	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	1	A
Peak collector current	I_{CM}	2	A
Base current	I_B	100	mA
Peak base current	I_{BM}	200	mA
Total power dissipation $T_A = 25\,°C$[1]	P_{tot}	0,8 (1)	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65...+150	°C
Thermal resistance			
junction – ambient[1]	R_{thJA}	≤156	K/W
junction – case	R_{thJC}	≤ 60	K/W

[1]) If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, $R_{thJA} = 125$ K/W and thus $P_{tot\,max} = 1$ W at $T_A = 25\,°C$.

Electrical Characteristics

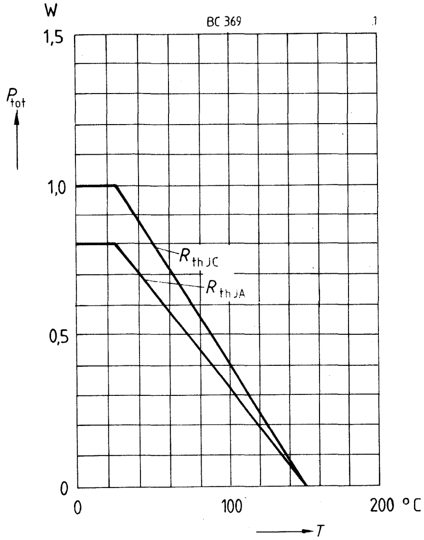
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 30$ mA	$V_{(BR)CEO}$	20	–	–	V
Collector-base breakdown voltage $I_C = 10$ μA	$V_{(BR)CBO}$	25	–	–	V
Emitter-base breakdown voltage $I_E = 1$ μA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CB} = 25$ V $V_{CB} = 25$ V, $T_A = 150\,°C$	I_{CBO}	 – –	 – –	 100 10	 nA μA
Emitter cutoff current $V_{EB} = 5$ V	I_{EBO}	–	–	10	μA
DC current gain $I_C = 5$ mA; $V_{CE} = 10$ V $I_C = 500$ mA; $V_{CE} = 1$ V[1] $I_C = 1$ A; $V_{CE} = 1$ V[1]	h_{FE}	 50 63 60	 – 160 –	 – 400 –	 – – –
Collector-emitter saturation voltage[1] $I_C = 1$ A; $I_B = 100$ mA	V_{CEsat}	–	–	0,5	V
Base-emitter voltage[1] $I_C = 5$ mA; $V_{CE} = 10$ V $I_C = 1$ A; $V_{CE} = 1$ V	V_{BE}	 – –	 0,6 –	 – 1	 V V

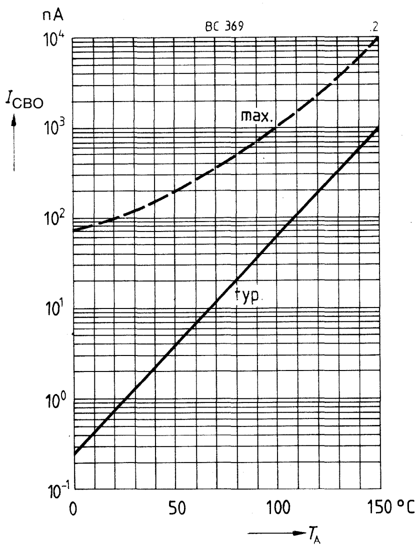
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 100$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	100	–	MHz

[1]) Pulse test: $t \leq 300$ μs, $D \leq 2\%$

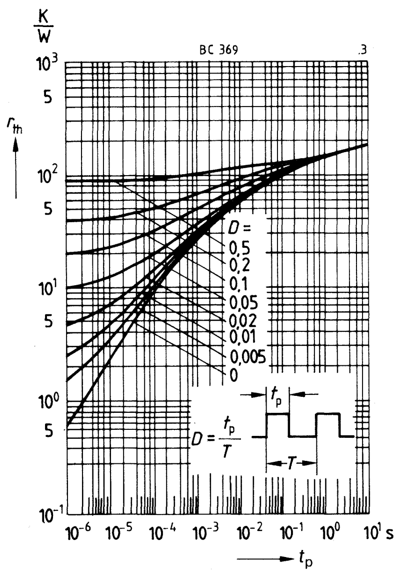
Total power dissipation $P_{tot} = f(T)$



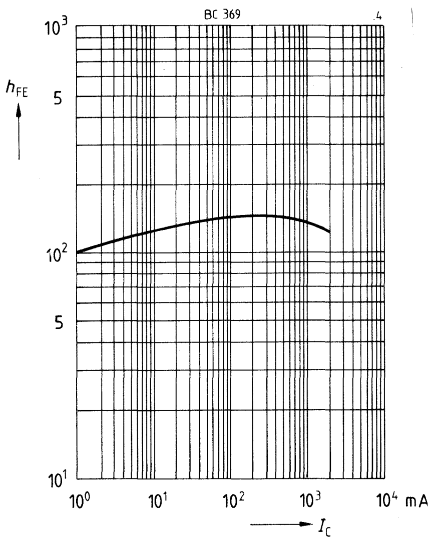
Collector cutoff current $I_{CBO} = f(T_A)$
$V_{CB} = 25$ V



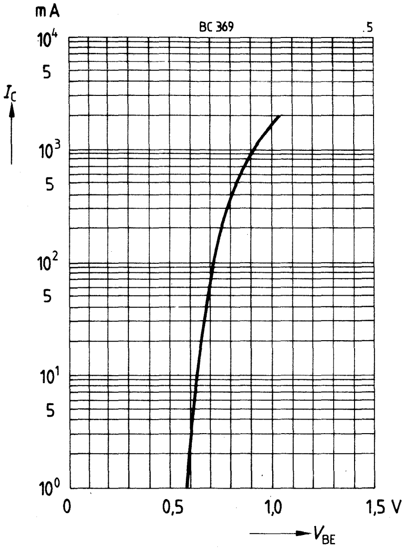
Pulse handling capability $r_{th} = f(t_p)$



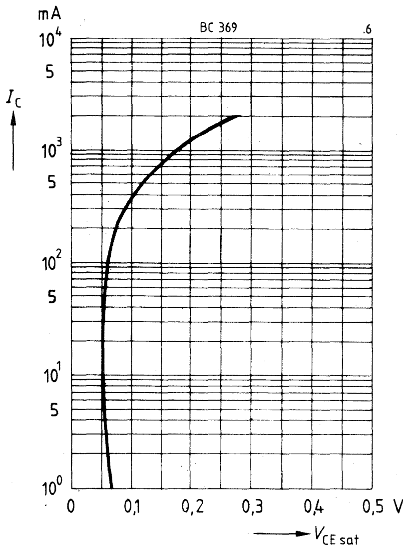
DC current gain $h_{FE} = f(I_C)$
$V_{CE} = 1$ V, $T_A = 25$ °C



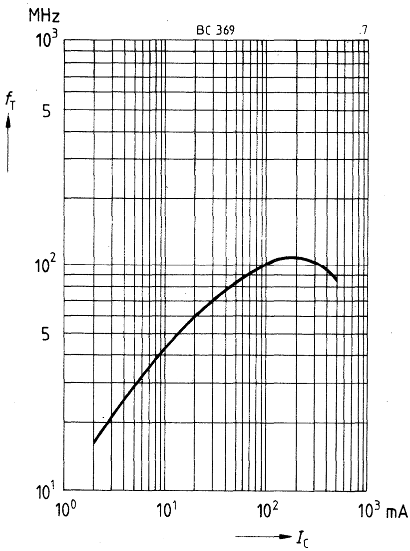
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 1$ V, $T_A = 25$ °C



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$, $T_A = 25$ °C



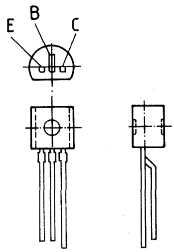
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 20$ MHz



NPN Silicon AF Transistors

BC 413
BC 414

- High current gain
- Low collector-emitter saturation voltage
- Low noise between 30 Hz and 15 kHz
- Complementary types: BC 415, BC 416 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 413	Q62702–C375	BC 414	Q62702–C376
BC 413 B	Q62702–C375-V1	BC 414 B	Q62702–C376-V1
BC 413 C	Q62702–C375-V2	S BC 414 C	Q62702–C376-V2

Maximum Ratings

Description	Symbol	BC 413	BC 414	Unit
Collector-emitter voltage	V_{CEO}	30	45	V
Collector-base voltage	V_{CBO}	45	50	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Peak emitter current	I_{EM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	–65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

Electrical Characteristics

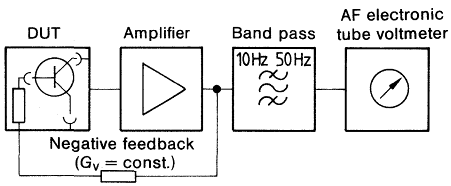
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 413		30	–	–	V
BC 414		45	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$				
BC 413		45	–	–	V
BC 414		50	–	–	V
Emitter-base breakdown voltage $I_E = 1\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain $I_C = 10\ \mu A$; $V_{CE} = 5$ V	h_{FE}				
BC 413 B, BC 414 B		100	150	–	–
BC 413 C, BC 414 C		100	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 413 B, BC 414 B		200	290	450	–
BC 413 C, BC 414 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	90	250	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	200	600	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	900	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		580	660	700	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	770	mV

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

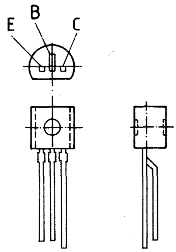
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 200$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 413 B, BC 414 B BC 413 C, BC 414 C	h_{11e}	 – –	 4,5 8,7	 – –	 kΩ kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 413 B, BC 414 B BC 413 C, BC 414 C	h_{12e}	 – –	 2 3	 – –	 10^{-4} 10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 413 B, BC 414 B BC 413 C, BC 414 C	h_{21e}	 – –	 330 600	 – –	 – –
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz BC 413 B, BC 414 B BC 413 C, BC 414 C	h_{22e}	 – –	 30 60	 – –	 µS µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	1,2	4	dB
Noise voltage $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 10$ Hz…50 Hz	E_n	–	–	0,135	mV

Test circuit for noise voltage measurement



For **characteristic curves** refer to BC 546…BC 550

- High current gain
- Low collector-emitter saturation voltage
- Low noise between 30 Hz and 15 kHz
- Complementary types: BC 413, BC 414 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 415	Q62702-C377	BC 416	Q62702-C378
BC 415 A	Q62702-C377-V1	BC 416 A	Q62702-C378-V1
BC 415 B	Q62702-C377-V2	BC 416 B	Q62702-C378-V2
S BC 415 C	Q62702-C377-V3	S BC 416 C	Q62702-C378-V3

Maximum Ratings

Description	Symbol	BC 415	BC 416	Unit
Collector-emitter voltage	V_{CEO}	35	45	V
Collector-base voltage	V_{CBO}	45	50	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Peak emitter current	I_{EM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

Electrical Characteristics

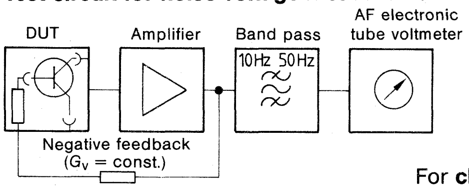
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 415		35	–	–	V
BC 416		45	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$				
BC 415		45	–	–	V
BC 416		50	–	–	V
Emitter-base breakdown voltage $I_E = 1\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain	h_{FE}				
$I_C = 10\ \mu A$; $V_{CE} = 5$ V					
BC 415 A, BC 416 A		40	90	–	–
BC 415 B, BC 416 B		100	150	–	–
BC 415 C, BC 416 C		100	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 415 A, BC 416 A		125	180	250	–
BC 415 B, BC 416 B		220	290	475	–
BC 415 C, BC 416 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	75	300	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	250	650	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	930	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		600	650	750	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	820	mV

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	4	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 415 A, BC 416 A		–	2,7	–	kΩ
BC 415 B, BC 416 B		–	4,5	–	kΩ
BC 415 C, BC 416 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 415 A, BC 416 A		–	1,5	–	10^{-4}
BC 415 B, BC 416 B		–	2	–	10^{-4}
BC 415 C, BC 416 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 415 A, BC 416 A		–	200	–	–
BC 415 B, BC 416 B		–	330	–	–
BC 415 C, BC 416 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 415 A, BC 416 A		–	18	–	µS
BC 415 B, BC 416 B		–	30	–	µS
BC 415 C, BC 416 C		–	60	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	1	4	dB
Noise voltage $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 10 \ldots 50$ Hz	E_n	–	–	0,110	mV

Test circuit for noise voltage measurement

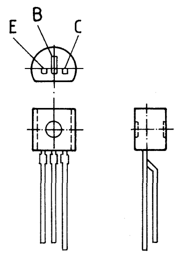


For **characteristic curves** refer to BC 556...BC 560

NPN Silicon AF Transistors

BC 546 ...BC 550

- High current gain
- Low collector-emitter saturation voltage
- Low noise between 30 Hz and 15 kHz
- Complementary types: BC 556, BC 557, BC 558, BC 559, BC 560 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 546	Q62702-C687	S BC 548 B	Q62702-C689-V2
BC 546 A	Q62702-C687-V1	S BC 548 C	Q62702-C689-V3
S BC 546 B	Q62702-C687-V2	BC 549	Q62702-C690
BC 547	Q62702-C688	BC 549 B	Q62702-C690-V1
BC 547 A	Q62702-C688-V1	S BC 549 C	Q62702-C690-V2
S BC 547 B	Q62702-C688-V2	BC 550	Q62702-C691
BC 548	Q62702-C689	BC 550 B	Q62702-C691-V1
BC 548 A	Q62702-C689-V1	S BC 550 C	Q62702-C691-V2

Maximum Ratings

Description	Symbol	BC 546	BC 547 BC 550	BC 548 BC 549	Unit
Collector-emitter voltage	V_{CEO}	65	45	30	V
Collector-base voltage	V_{CBO}	80	50	30	V
Emitter-base voltage	V_{EBO}	6	6	5	V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Peak emitter current	I_{EM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤250		K/W
junction – case	R_{thJC}		≤150		K/W

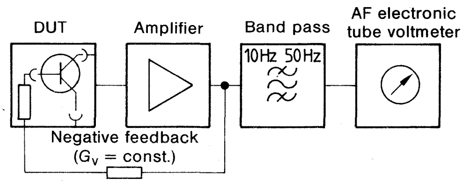
Electrical Characteristics
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				
$I_C = 2$ mA BC 546		65	–	–	V
BC 547, BC 550		45	–	–	V
BC 548, BC 549		30	–	–	V
Collector-base breakdown voltage	$V_{(BR)CBO}$				
$I_C = 10\ \mu A$ BC 546		80	–	–	V
BC 547, BC 550		50	–	–	V
BC 548, BC 549		30	–	–	V
Collector-emitter breakdown voltage	$V_{(BR)CES}$				
$I_C = 10\ \mu A$, $V_{BE} = 0$ BC 546		80	–	–	V
BC 547, BC 550		50	–	–	V
BC 548, BC 549		30	–	–	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$				
$I_E = 1\ \mu A$ BC 546, BC 547		6	–	–	V
BC 548, BC 549, BC 550		5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain	h_{FE}				
$I_C = 10\ \mu A$; $V_{CE} = 5$ V					
BC 546 A, BC 547 A, BC 548 A		–	90	–	–
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B		–	150	–	–
BC 548 C, BC 549 C, BC 550 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 546 A, BC 547 A, BC 548 A		110	180	220	–
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B		200	290	450	–
BC 548 B, BC 549 C, BC 550 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	90	250	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	200	600	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	900	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		580	660	700	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	770	mV

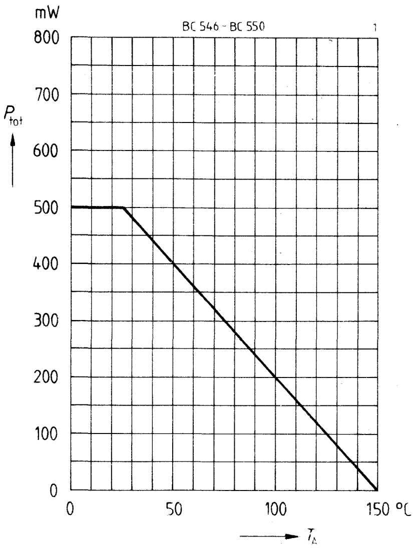
[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

AC Characteristics		Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz		f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz		C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0,5$ V, $f = 1$ MHz		C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz		h_{11e}				
BC 546 A, BC 547 A, BC 548 A			–	2,7	–	kΩ
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B			–	4,5	–	kΩ
BC 548 C, BC 549 C, BC 550 C			–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 45$ V, $f = 1$ kHz		h_{12e}				
BC 546 A, BC 547 A, BC 548 A			–	1,5	–	10^{-4}
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B			–	2	–	10^{-4}
BC 548 C, BC 549 C, BC 550 C			–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz		h_{21e}				
BC 546 A, BC 547 A, BC 548 A			–	200	–	–
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B			–	330	–	–
BC 548 C, BC 549, BC 550 C			–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz		h_{22e}				
BC 546 A, BC 547 A, BC 548 A			–	18	–	µS
BC 546 B, BC 547 B, BC 548 B, BC 549 B, BC 550 B			–	30	–	µS
BC 548 C, BC 549, BC 550 C			–	60	–	µS
Noise figure $I_C = 0,2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ		F				
$f = 30$ Hz…15 kHz	BC 549		–	1,4	4	dB
	BC 550		–	1,4	3	dB
$I_C = 1$ kHz, $\Delta f = 200$ Hz	BC 549		–	1,2	4	dB
	BC 550		–	1	4	dB
	BC 546, BC 547, BC 548		–	2	–	dB
Noise voltage $I_C = 0,2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ		E_n				
$f = 10$ Hz…50 Hz	BC 550		–	–	0,135	mV

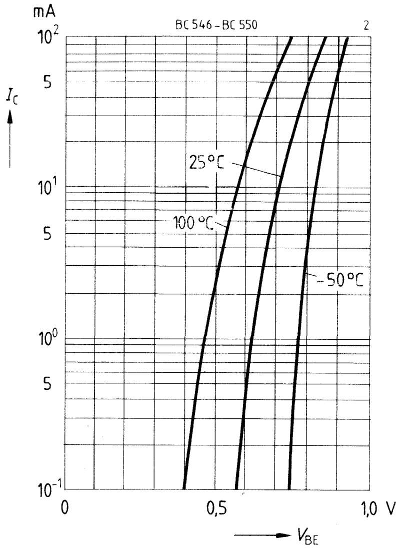
Test circuit for
noise voltage measurement



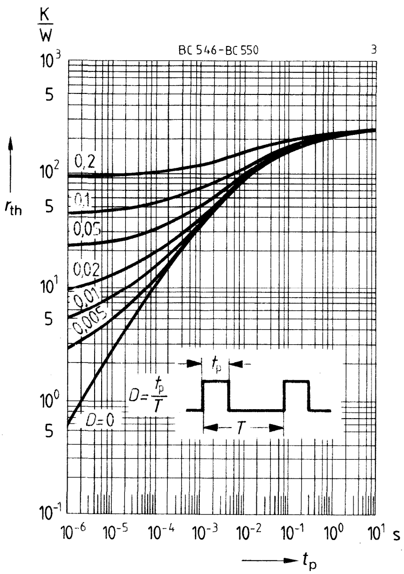
Total power dissipation $P_{tot} = f\ (T_A)$



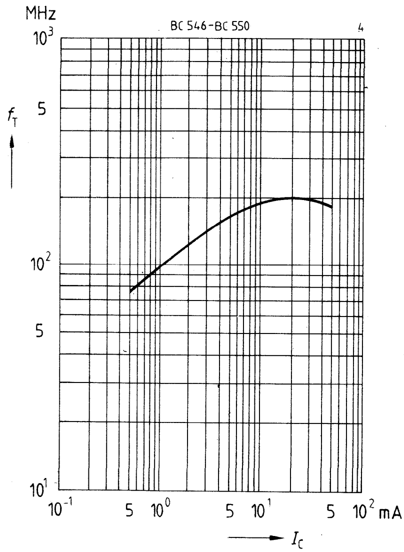
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 5$ V



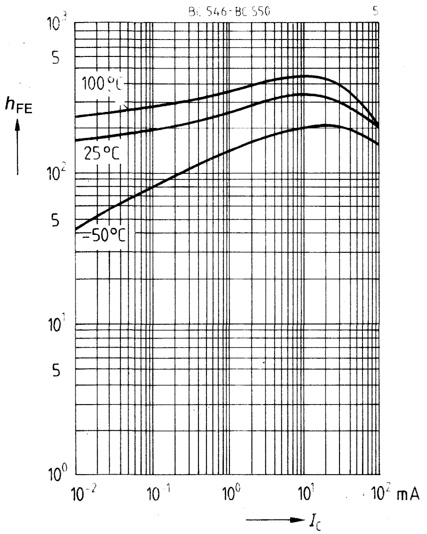
Pulse handling capability $r_{th} = f\ (t_p)$



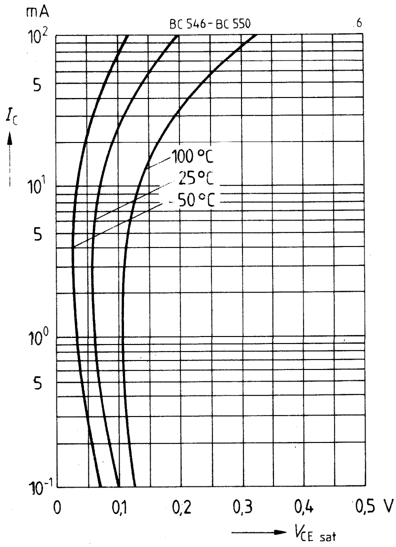
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 100$ MHz



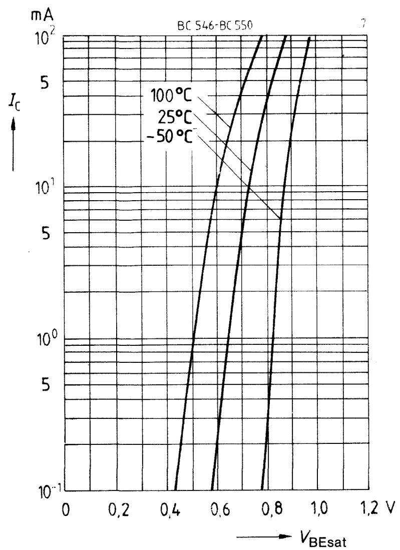
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5$ V (common emitter configuration)



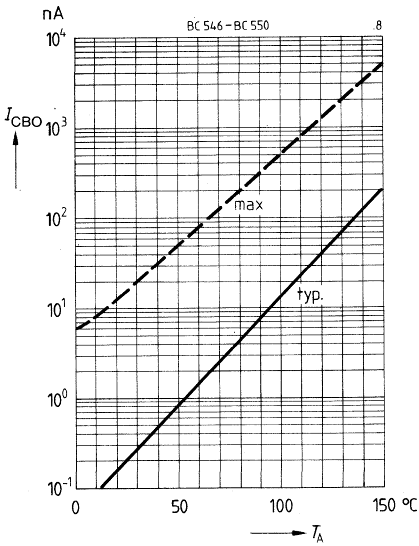
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 20$



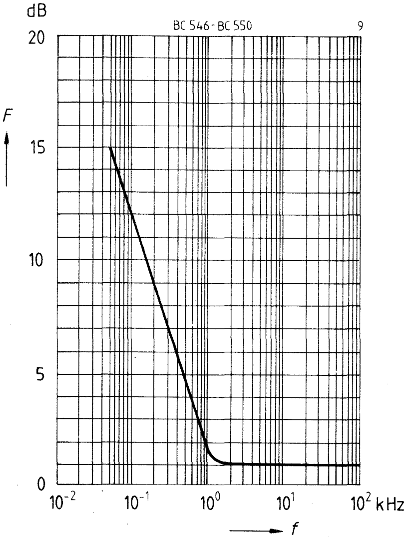
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 20$



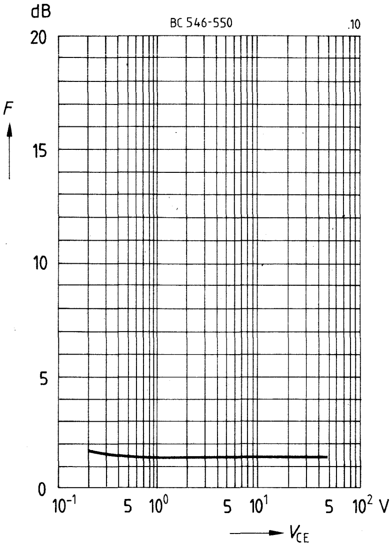
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



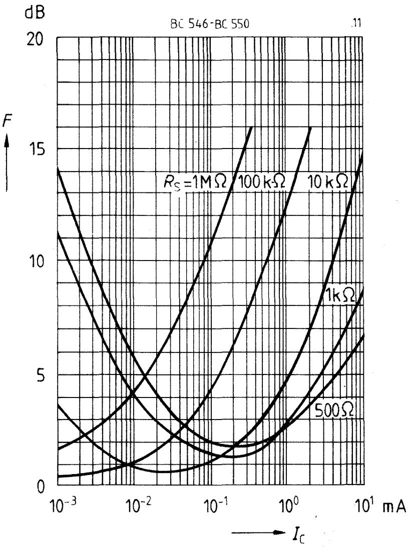
Noise figure $F = f\,(f)$
$I_C = 0{,}2$ mA, $f = 1$ kHz, $R_S = 2$ kΩ



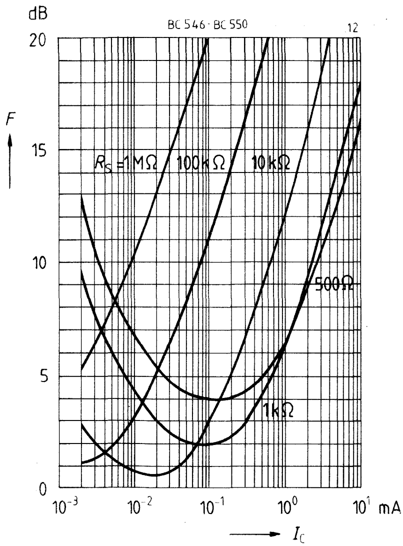
Noise figure $F = f\,(V_{CE})$
$I_C = 0{,}2$ mA, $R_S = 2$ kΩ, $f = 1$ kHz
$\Delta f = 200$ Hz, $T_A = 25$ °C



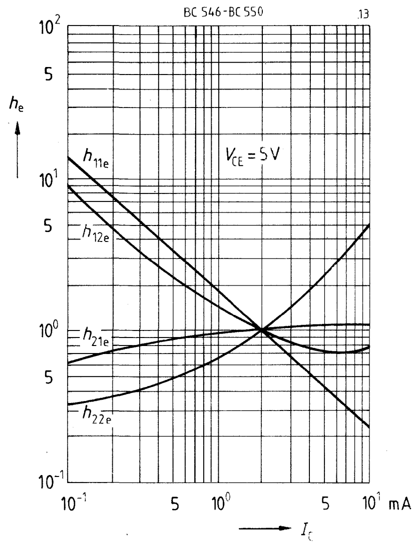
Noise figure $F = f\,(I_C)$
$V_{CE} = 5$ V, $f = 120$ kHz



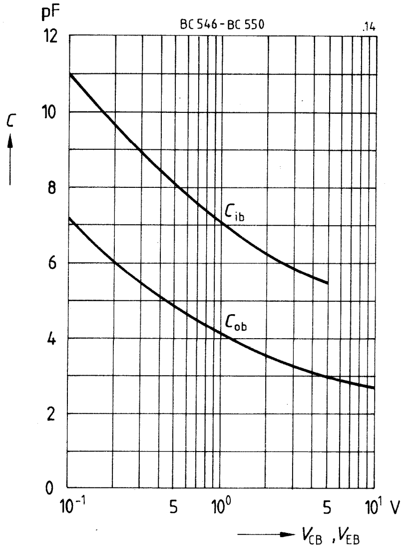
Noise figure $F = f\,(I_C)$
$V_{CE} = 5$ V, $f = 1$ Hz



h parameter $h_e = f\ (I_C)$



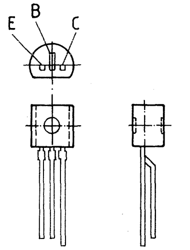
Capacitance $C = f\ (V_{CB},\ V_{EB})$



PNP Silicon AF Transistors

BC 556
...BC 560

- High current gain
- Low collector-emitter saturation voltage
- Low noise between 30 Hz and 15 kHz
- Complementary types: BC 546, BC 547,
  BC 548, BC 549, BC 550 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 556	Q62702-C692	S BC 558 C	Q62702-C694-V3
BC 556 A	Q62702-C692-V1	BC 559	Q62702-C695
S BC 556 B	Q62702-C692-V2	BC 559 A	Q62702-C695-V1
BC 557	Q62702-C693	BC 559 B	Q62702-C695-V2
BC 557 A	Q62702-C693-V1	S BC 559 C	Q62702-C695-V3
S BC 557 B	Q62702-C693-V2	BC 560	Q62702-C696
BC 558	Q62702-C694	BC 560 A	Q62702-C696-V1
BC 558 A	Q62702-C694-V1	S BC 560 B	Q62702-C696-V2
S BC 558 B	Q62702-C694-V2	S BC 560 C	Q62702-C696-V3

Maximum Ratings

Description	**Symbol**	**BC 556**	**BC 557 BC 560**	**BC 558 BC 559**	**Unit**
Collector-emitter voltage	V_{CEO}	65	45	30	V
Collector-base voltage	V_{CBO}	80	50	30	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		100		mA
Peak collector current	I_{CM}		200		mA
Peak base current	I_{BM}		200		mA
Peak emitter current	I_{EM}		200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}		500		mW
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤250		K/W
junction – case	R_{thJC}		≤150		K/W

Electrical Characteristics

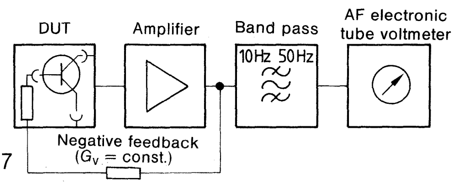
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 2$ mA	$V_{(BR)CEO}$				
BC 556		65	–	–	V
BC 557, BC 560		45	–	–	V
BC 558, BC 559		30	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$	$V_{(BR)CBO}$				
BC 556		80	–	–	V
BC 557, BC 560		50	–	–	V
BC 558, BC 559		30	–	–	V
Collector-emitter breakdown voltage $I_C = 10\ \mu A$, $V_{BE} = 0$	$V_{(BR)CES}$				
BC 556		80	–	–	V
BC 557, BC 560		50	–	–	V
BC 558, BC 559		30	–	–	V
Emitter-base breakdown voltage $I_E = 1\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	15	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	4	µA
DC current gain $I_C = 10\ \mu A$; $V_{CE} = 5$ V	h_{FE}				
BC 556 A, BC 557 A, BC 558 A		–	90	–	–
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		–	150	–	–
BC 558 C, BC 559 C		–	270	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V					
BC 556 A, BC 557 A, BC 558 A		125	180	250	–
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		220	290	475	–
BC 558 C, BC 559 C		420	520	800	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	75	300	mV
$I_C = 100$ mA, $I_B = 5$ mA		–	250	650	mV
Base-emitter saturation voltage[1])	V_{BEsat}				
$I_C = 10$ mA; $I_B = 0{,}5$ mA		–	700	–	mV
$I_C = 100$ mA; $I_B = 5$ mA		–	930	–	mV
Base-emitter voltage	$V_{BE(on)}$				
$I_C = 2$ mA; $V_{CE} = 5$ V		600	650	750	mV
$I_C = 10$ mA; $V_{CE} = 5$ V		–	–	820	mV

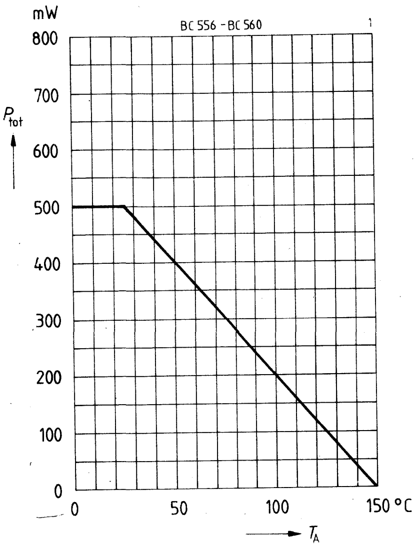
[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	4	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	10	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BC 556 A, BC 557 A, BC 558 A		–	2,7	–	kΩ
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		–	4,5	–	kΩ
BC 558 C, BC 559 C, BC 560 C		–	8,7	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BC 556 A, BC 557 A, BC 558 A		–	1,5	–	10^{-4}
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		–	2	–	10^{-4}
BC 558 C, BC 559 C, BC 560 C		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BC 556 A, BC 557 A, BC 558 A		–	200	–	–
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		–	330	–	–
BC 558 C, BC 559 C, BC 560 C		–	600	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BC 556 A, BC 557 A, BC 558 A		–	18	–	µS
BC 556 B, BC 557 B, BC 558 B, BC 559 B, BC 560 B		–	30	–	µS
BC 558 C, BC 559 C, BC 560 C		–	60	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ	F				
$f = 30$ Hz...15 kHz BC 559		–	1,2	4	dB
BC 560		–	1	3	dB
$I_C = 1$ kHz, $\Delta f = 200$ Hz BC 559		–	1	4	dB
BC 560		–	1	4	dB
BC 556, BC 557, BC 558		–	2	–	dB
Noise voltage $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 10$ Hz...50 Hz BC 560	E_n	–	–	0,110	mV

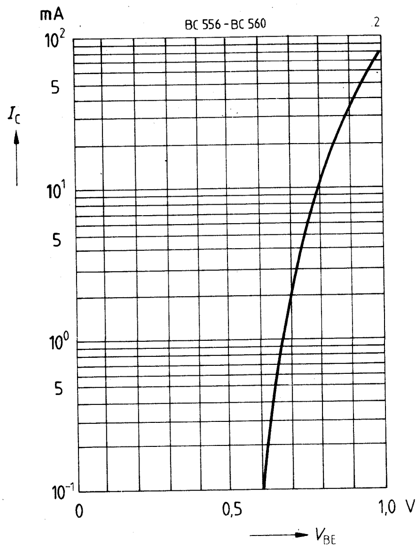
Test circuit for noise voltage measurement



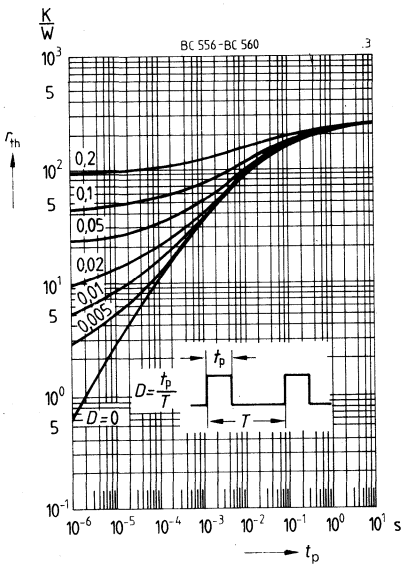
Total power dissipation $P_{tot} = f\ (T_A)$



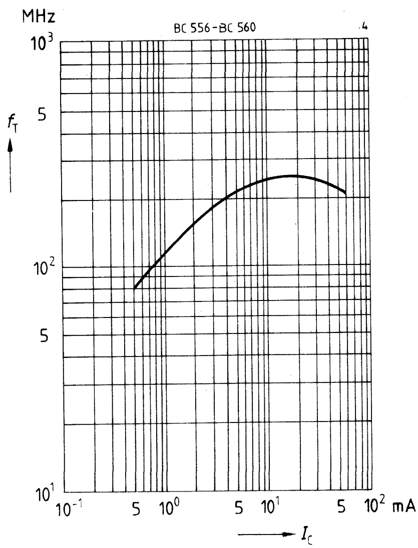
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 5$ V



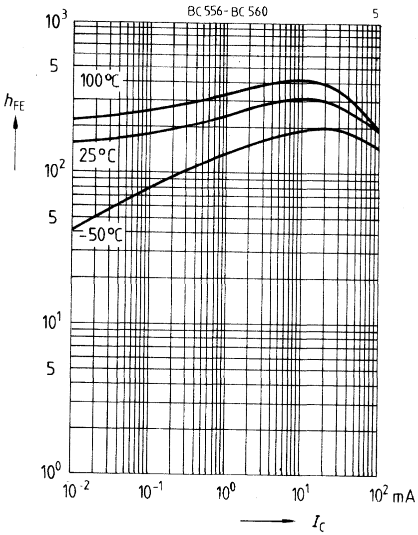
Pulse handling capability $r_{th} = f\ (t_p)$



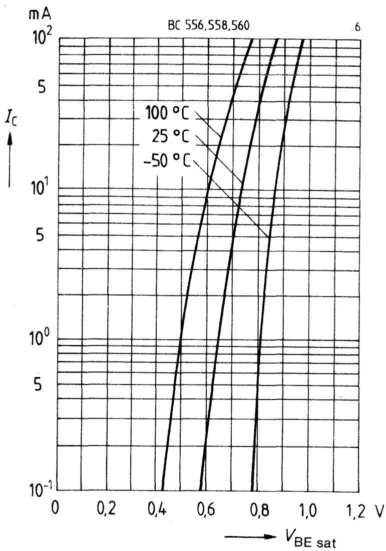
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 100$ MHz



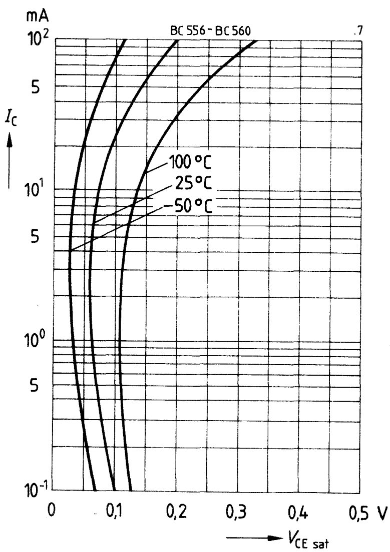
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5$ V (common emitter configuration)



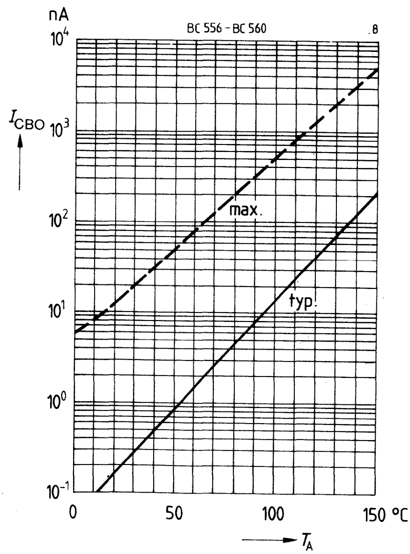
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 20$



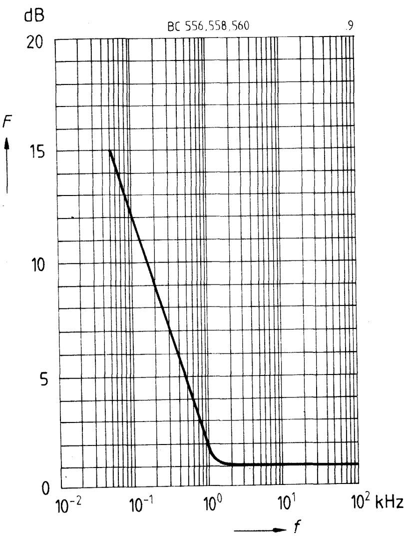
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 20$



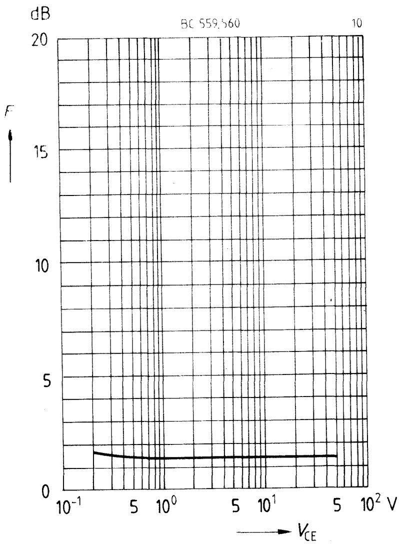
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



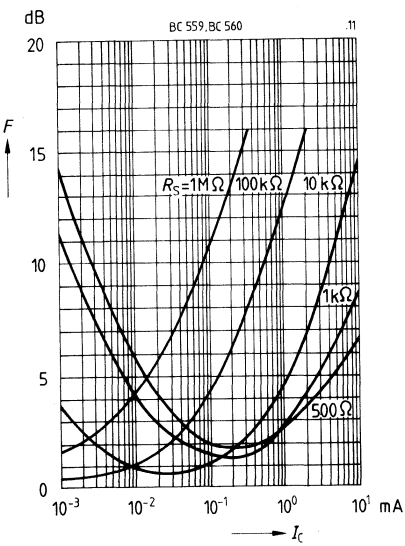
Noise figure $F = f\,(f)$
$I_C = 0{,}2$ mA, $f = 12$ kHz, $R_S = 2$ kΩ



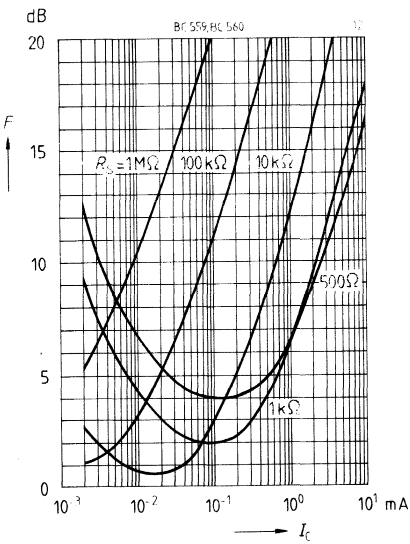
Noise figure $F = f\,(V_{CE})$
$I_C = 0{,}2$ mA, $R_S = 2$ kΩ, $f = 1$ kHz
$\Delta f = 200$ Hz, $T_A = 25$ °C



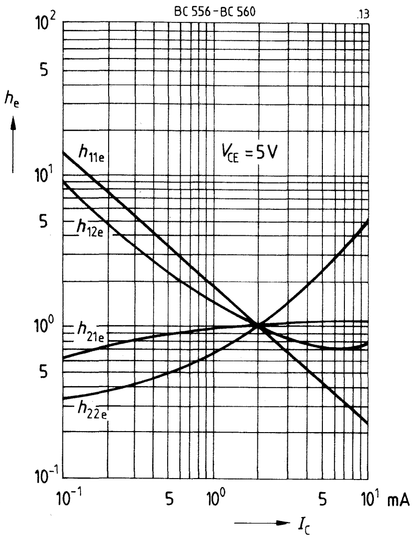
Noise figure $F = f\,(I_C)$
$V_{CE} = 5$ V, $f = 120$ kHz



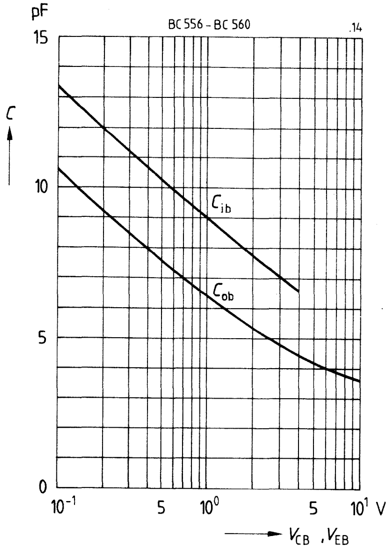
Noise figure $F = f\,I_C)$
$V_{CE} = 5$ V, $f = 1$ Hz



h parameter $h_e = f\ (I_C)$



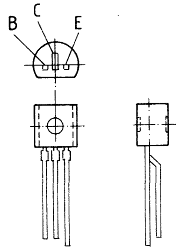
Capacitance $C = f\ (V_{CB}, V_{EB})$



NPN Silicon AF Transistors

BC 635
...BC 639

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 636, BC 638, BC 640 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
Ⓢ BC 635	Q68000–A3360	Ⓢ BC 637	Q68000–A2285	Ⓢ BC 639	Q68000–A3361

If desired, selected transistors, type BC 63 * –10 (h_{FE} = 63...160), or BC 63 * –16 (h_{FE} = 100...250) are available. Ordering codes upon request.

Maximum Ratings

Description	Symbol	BC 635	BC 637	BC 639	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	45	60	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		1,5		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_A = 25$ °C [1)]	P_{tot}		0,8 (1)		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		–65...+150		°C
Thermal resistance					
junction – ambient [1)]	R_{thJA}		≤156		K/W
junction – case	R_{thJC}		≤55		K/W

1) If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, R_{thJA} = 125 K/W and thus $P_{tot\,max}$ = 1 W at T_A = 25 °C.

Electrical Characteristics

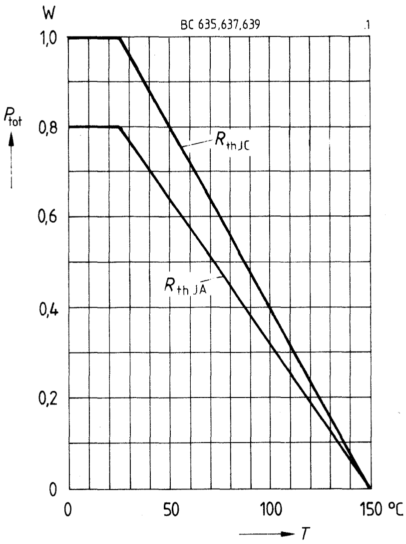
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$				
BC 635		45	–	–	V
BC 637		60	–	–	V
BC 639		80	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CBO}$				
BC 635		45	–	–	V
BC 637		60	–	–	V
BC 639		100	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	100	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C = 5$ mA; $V_{CE} = 2$ V		25	–	–	–
$I_C = 150$ mA; $V_{CE} = 2$ V[1])					
BC 635-6, BC 637-6, BC 639-6		40	63	100	–
BC 635-10, BC 637-10, BC 639-10		63	100	160	–
BC 635-16		100	160	250	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1])		25	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 500$ mA; $I_B = 50$ mA	V_{CEsat}	–	–	500	mV
Base-emitter voltage[1]) $I_C = 500$ mA; $V_{CE} = 2$ V	V_{BE}	–	–	1	V

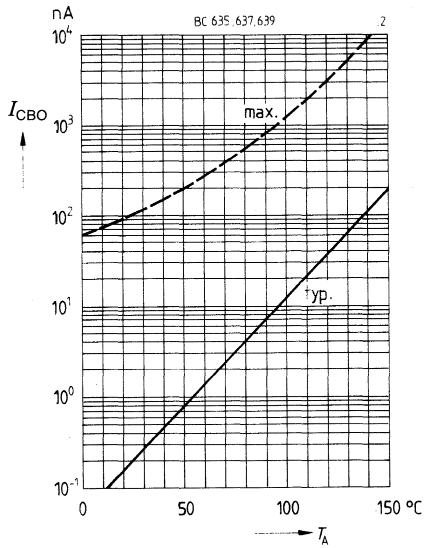
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

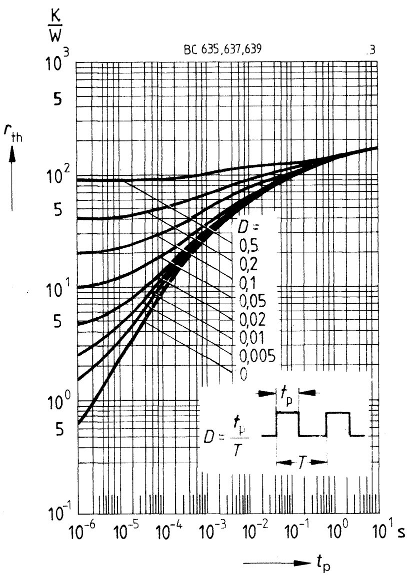
Total power dissipation $P_{tot} = f\ (T)$



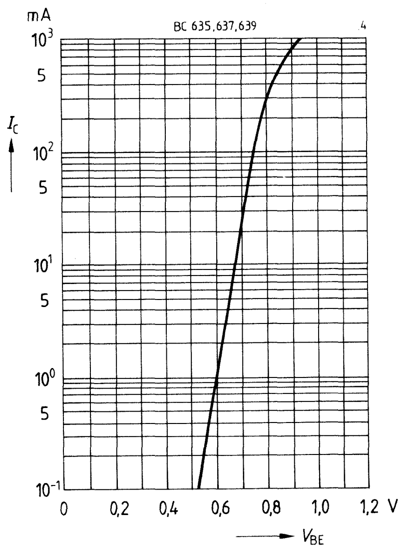
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



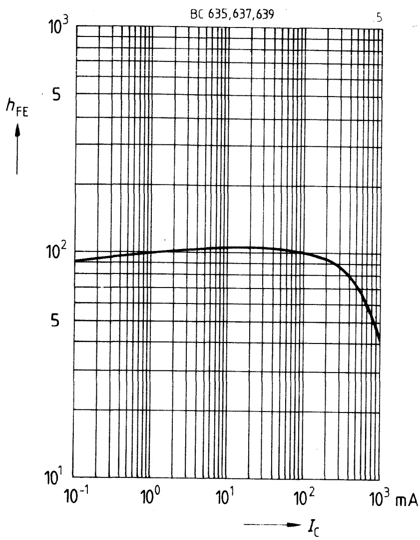
Pulse handling capability $r_{th} = f\ (t_p)$
$V_{CE} = 2$ V



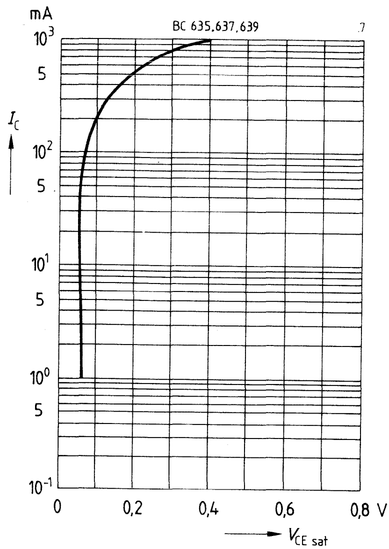
Collector current $I_C = f\ (V_{BE})$



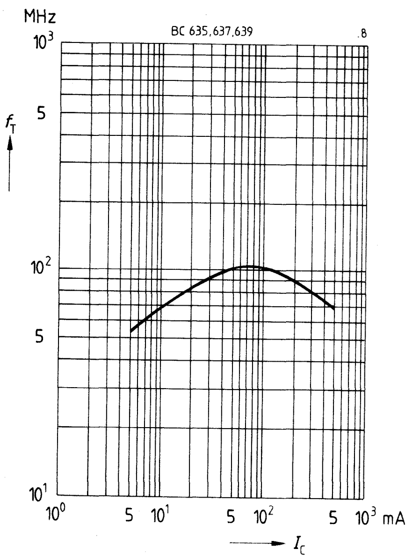
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 2$ V



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$



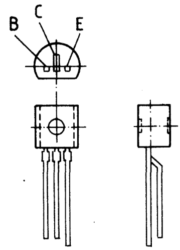
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



PNP Silicon AF Transistors

BC 636 ...BC 640

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 635, BC 637, BC 639 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
S BC 636	Q68000–A3365	S BC 638	Q68000–A3366	S BC 640	Q68000–A3367

If desired, selected transistors, type BC 6 * * –10 (h_{FE} = 63...160), or BC 6 * * –16 (h_{FE} = 100...250) are available. Ordering codes upon request.

Maximum Ratings

Description	Symbol	BC 636	BC 638	BC 640	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	45	60	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		1,5		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_A = 25\,°C$[1]	P_{tot}		0,8 (1)		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		–65...+150		°C
Thermal resistance					
junction – ambient[1])	R_{thJA}		≤156		K/W
junction – case	R_{thJC}		≤55		K/W

[1]) If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, R_{thJA} = 125 K/W and thus $P_{tot\,max}$ = 1 W at T_A = 25 °C.

Electrical Characteristics

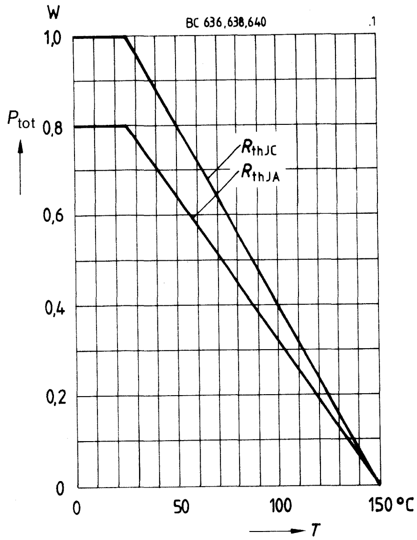
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$				
BC 636		45	–	–	V
BC 638		60	–	–	V
BC 640		80	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CBO}$				
BC 636		45	–	–	V
BC 638		60	–	–	V
BC 640		100	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	100	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	20	μA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C =$ 5 mA; $V_{CE} = 2$ V		25	–	–	–
$I_C = 150$ mA; $V_{CE} = 2$ V[1]					
BC 636-6, BC 638-6, BC 640-6		40	63	100	–
BC 636-10, BC 638-10, BC 640-10		63	100	160	–
BC 636-16		100	160	250	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1]		25	–	–	–
Collector-emitter saturation voltage[1] $I_C = 500$ mA; $I_B = 50$ mA	V_{CEsat}	–	–	500	V
Base-emitter voltage[1] $I_C = 500$ mA; $V_{CE} = 2$ V	V_{BE}	–	–	1	V

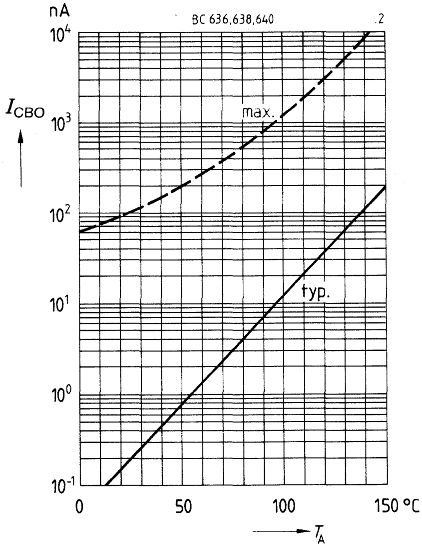
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

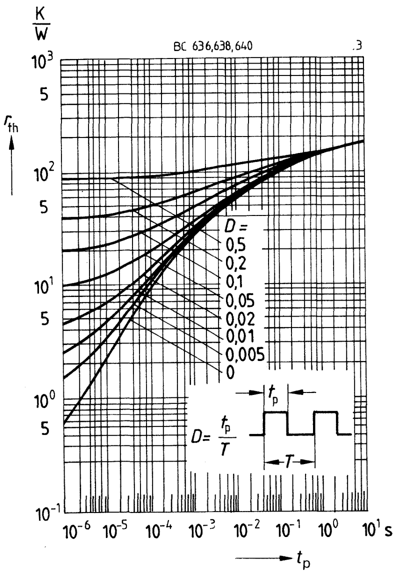
Total power dissipation $P_{tot} = f(T)$



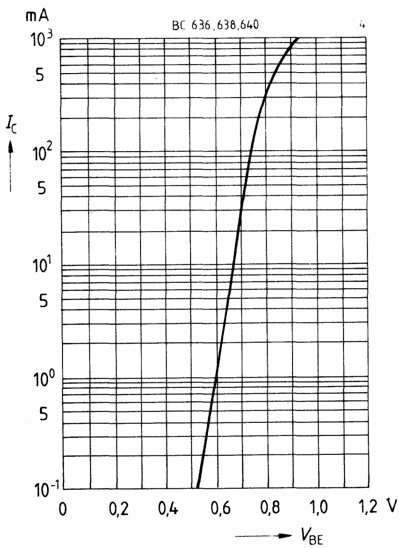
Collector cutoff current $I_{CBO} = f(T_A)$
$V_{CB} = 30$ V



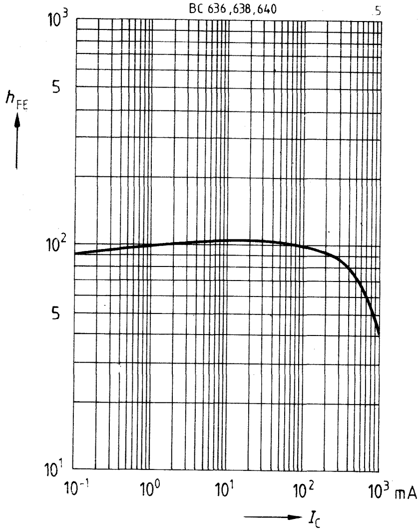
Pulse handling capability $r_{th} = f(t_p)$



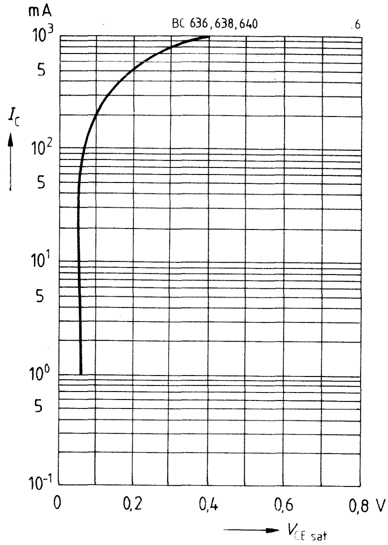
Collector current $I_C = f(V_{BE})$
$V_{CE} = 2$ V



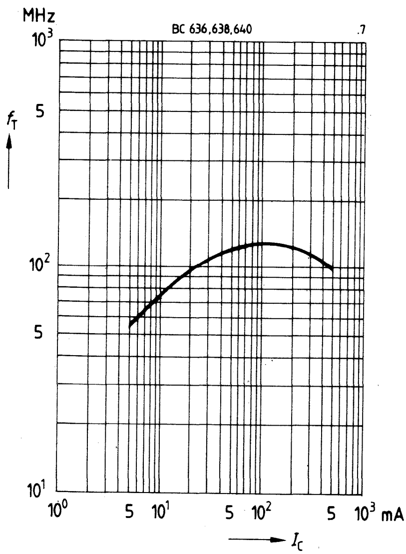
DC current gain $h_{FE} = f\,(I_C)$
$V_{CE} = 2$ V



Collector-emitter saturation voltage $V_{CEsat} = f\,(I_C)$
$h_{FE} = 10$



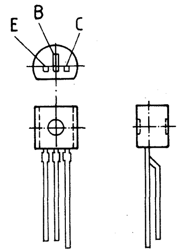
Transition frequency $f_T = f\,(I_C)$



NPN Silicon AF Transistors

BCX 58
BCX 59

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BCX 78, BCX 79 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BCX 58 VIII	Q62702-C619	BCX 59 VIII	Q62702-C623
BCX 58 IX	Q62702-C620	BCX 59 IX	Q62702-C624
BCX 58 X	Q62702-C621	BCX 59 X	Q62702-C625

Maximum Ratings

Description	Symbol	BCX 58	BCX 59	Unit
Collector-emitter voltage	V_{CEO}	32	45	V
Collector-base voltage	V_{CBO}	32	45	V
Emitter-base voltage	V_{EBO}	7		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

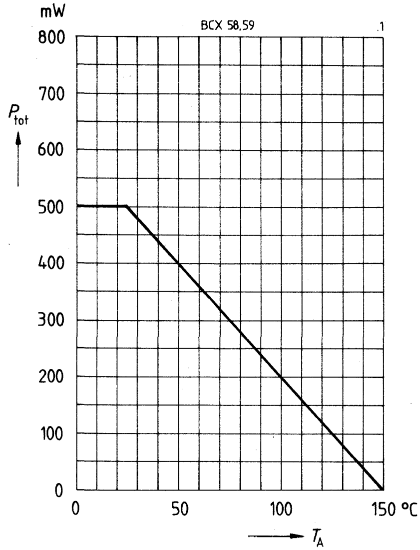
Electrical Characteristics
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
$I_C = 2$ mA	BCX 58		32	–	–	V
	BCX 59		45	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
$I_C = 10\,\mu A$	BCX 58		32	–	–	V
	BCX 59		45	–	–	V
Emitter-base breakdown voltage $I_E = 1\,\mu A$		$V_{(BR)EBO}$	7	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 32$ V	BCX 58		–	–	20	nA
$V_{CB} = 45$ V	BCX 59		–	–	20	nA
$V_{CB} = 32$ V, $T_A = 150\,°C$	BCX 58		–	–	10	µA
$V_{CB} = 45$ V, $T_A = 150\,°C$	BCX 59		–	–	10	µA
Collector cutoff current		I_{CEX}				
$V_{CE} = 32$ V, $V_{BE} = 0{,}2$ V, $T_A = 100\,°C$			–	–	20	µA
$V_{CE} = 45$ V, $V_{BE} = 0{,}2$ V, $T_A = 100\,°C$			–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V		I_{EBO}	–	–	20	nA
DC current gain		h_{FE}				
$I_C = 10\,\mu A$; $V_{CE} = 5$ V						
	BCX 58 VII, BCX 59 VII		20	78	–	–
	BCX 58 VIII, BCX 59 VIII		20	145	–	–
	BCX 58 IX, BCX 59 IX		40	220	–	–
	BCX 58 X, BCX 59 X		100	300	–	–
$I_C = 2$ mA; $V_{CE} = 5$ V						
	BCX 58 VII, BCX 59 VII		120	170	220	–
	BCX 58 VIII, BCX 59 VIII		180	250	310	–
	BCX 58 IX, BCX 59 IX		250	350	460	–
	BCX 58 X, BCX 59 X		380	500	630	–
$I_C = 100$ mA; $V_{CE} = 1$ V[1])						
	BCX 58 VII, BCX 59 VII		40	–	–	–
	BCX 58 VIII, BCX 59 VIII		45	–	–	–
	BCX 58 IX, BCX 59 IX		60	–	–	–
	BCX 58 X, BCX 59 X		60	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 100$ mA; $I_B = 2{,}5$ mA		V_{CEsat}	–	–	0,5	V
Base-emitter saturation voltage[1]) $I_C = 100$ mA; $I_B = 2{,}5$ mA		V_{BEsat}	–	–	1,0	V
Base-emitter voltage		$V_{BE(on)}$				
$I_C = 10\,\mu A$; $V_{CE} = 5$ V			–	0,52	–	V
$I_C = 2$ mA; $V_{CE} = 5$ V			0,55	0,65	0,75	V
$I_C = 100$ mA; $V_{CE} = 1$ V[1])			–	0,83	–	V

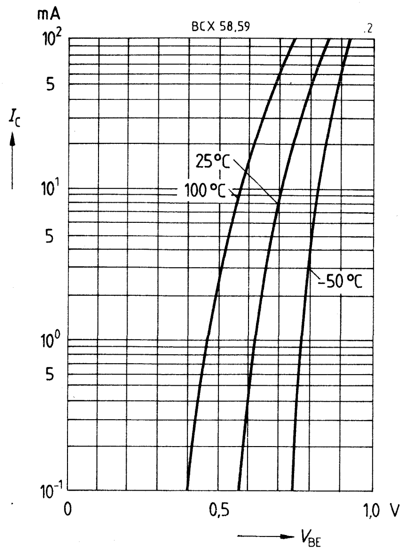
[1]) Pulse test: $t \leq 300\,\mu s$, $D \leq 2\%$

AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	8	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BCX 58 VII, BCX 59 VII		–	2,7	–	kΩ
BCX 58 VIII, BCX 59 VIII		–	3,6	–	kΩ
BCX 58 IX, BCX 59 IX		–	4,5	–	kΩ
BCX 58 X, BCX 59 X		–	7,5	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BCX 58 VII, BCX 59 VII		–	1,5	–	10^{-4}
BCX 58 VIII, BCX 59 VIII		–	2	–	10^{-4}
BCX 58 IX, BCX 59 IX		–	2	–	10^{-4}
BCX 58 X, BCX 59 X		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BCX 58 VII, BCX 59 VII		–	200	–	–
BCX 58 VIII, BCX 59 VIII		–	260	–	–
BCX 58 IX, BCX 59 IX		–	330	–	–
BCX 58 X, BCX 59 X		–	520	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BCX 58 VII, BCX 59 VII		–	18	–	µS
BCX 58 VIII, BCX 59 VIII		–	24	–	µS
BCX 58 IX, BCX 59 IX		–	30	–	µS
BCX 58 X, BCX 59 X		–	50	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	2	–	dB

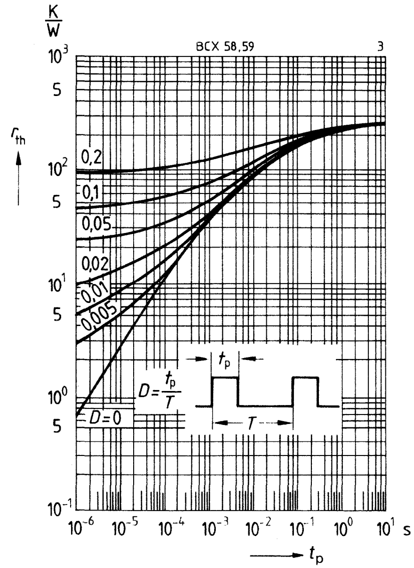
Total power dissipation $P_{tot} = f\ (T_A)$



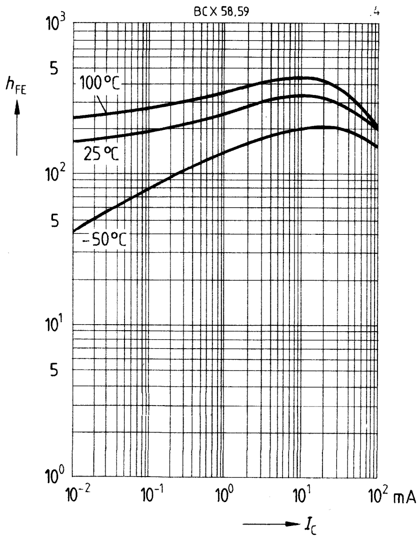
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 5$ V (common emitter configuration)



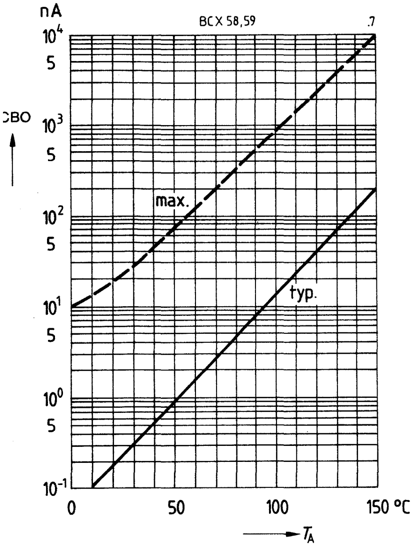
Pulse handling capability $r_{th} = f\ (t_p)$



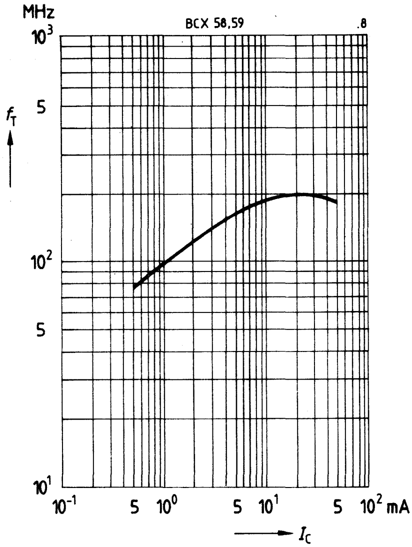
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5$ V (common emitter configuration)



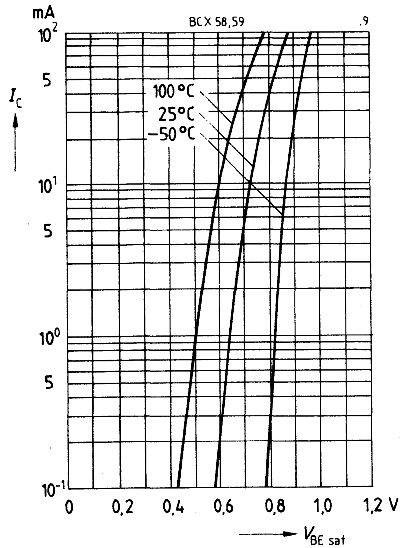
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 45$ V



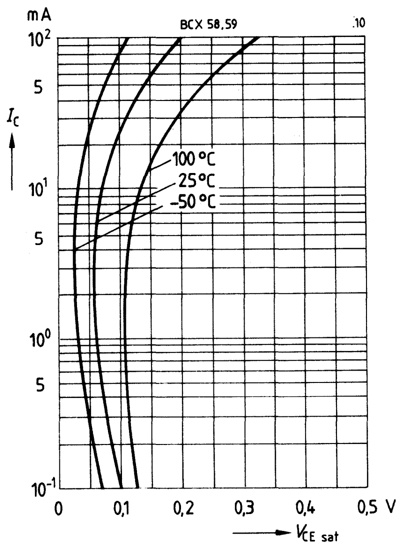
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 100$ MHz



Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 20$



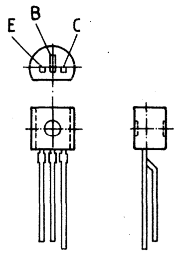
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 20$



NPN Silicon AF Transistors

BCX 73
BCX 74

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX 75, BCX 76 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BCX 73	Q62702–C634	BCX 74	Q62702–C635
BCX 73-16	Q62702–C634-S1	BCX 74-16	Q62702–C635-S1
BCX 73-25	Q62702–C634-S2	BCX 74-25	Q62702–C635-S2
BCX 73-40	Q62702–C634-S3	BCX 74-40	Q62702–C635-S3

Maximum Ratings

Description	Symbol	BCX 73	BCX 74	Unit
Collector-emitter voltage	V_{CEO}	32	45	V
Collector-base voltage	V_{CBO}	60	75	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	–65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

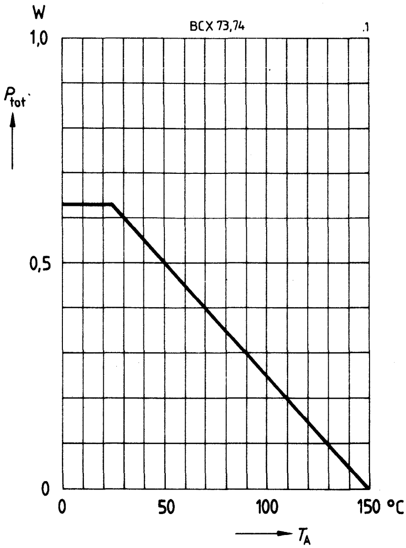
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				
$I_C = 10$ mA BCX 73		32	–	–	V
BCX 74		45	–	–	V
Collector-base breakdown voltage	$V_{(BR)CBO}$				
$I_C = 100$ µA BCX 73		60	–	–	V
BCX 74		75	–	–	V
Emitter-base breakdown voltage $I_E = 10$ µA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 35$ V BCX 73		–	–	20	nA
$V_{CB} = 45$ V BCX 74		–	–	20	nA
$V_{CB} = 35$ V, $T_A = 150\,°C$ BCX 73		–	–	5	µA
$V_{CB} = 45$ V, $T_A = 150\,°C$ BCX 74		–	–	5	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C = 100$ µA; $V_{CE} = 10$ V		35	–	–	–
$I_C = 1$ mA; $V_{CE} = 1$ V		50	–	–	–
$I_C = 10$ mA; $V_{CE} = 1$ V		75	–	–	–
$I_C = 100$ mA; $V_{CE} = 1$ V[1])					
BCX 73-16; BCX 74-16		100	160	250	–
BCX 73-25; BCX 74-25		160	250	400	–
BCX 73-40; BCX 74-40		250	350	630	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1])		35	–	–	–
Collector-emitter saturation voltage[1])	V_{CEsat}				
$I_C = 100$ mA; $I_B = 10$ mA		–	–	0,25	V
$I_C = 500$ mA; $I_B = 50$ mA		–	–	0,6	V
Base-emitter saturation voltage[1]) $I_C = 500$ mA; $I_B = 50$ mA	V_{BEsat}	–	–	1,5	V

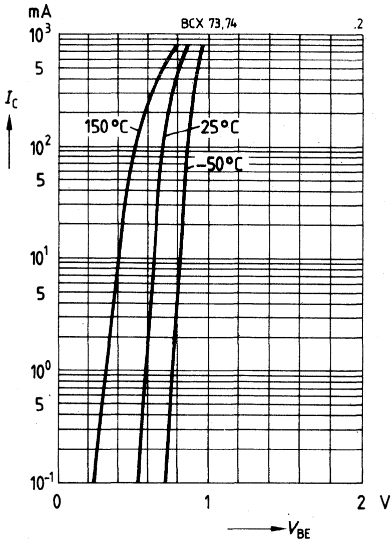
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	170	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	8	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	60	–	pF

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

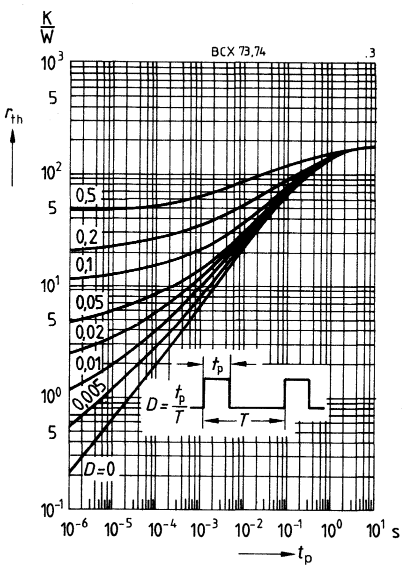
Total power dissipation $P_{tot} = f\ (T_A)$



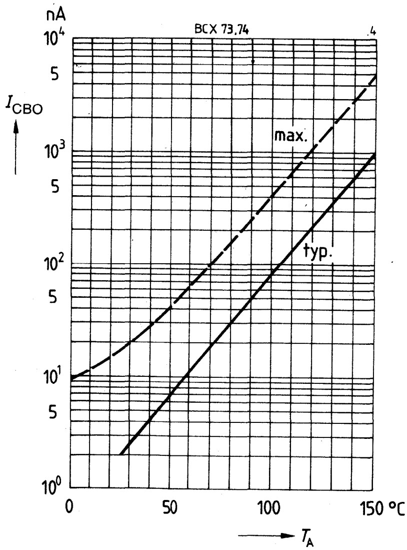
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 1$ V



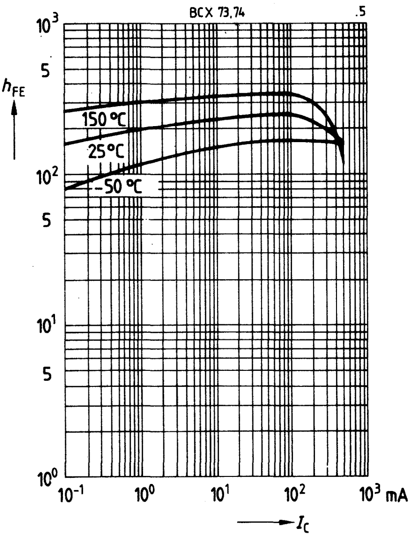
Pulse handling capability $r_{th} = f\ (t_p)$



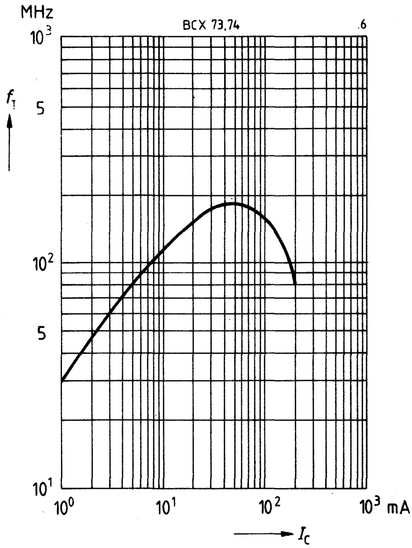
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 45$ V



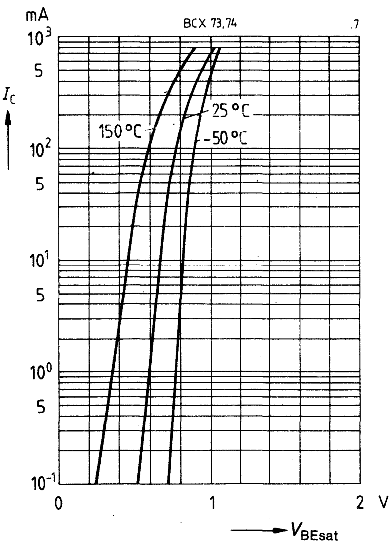
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 1$ V



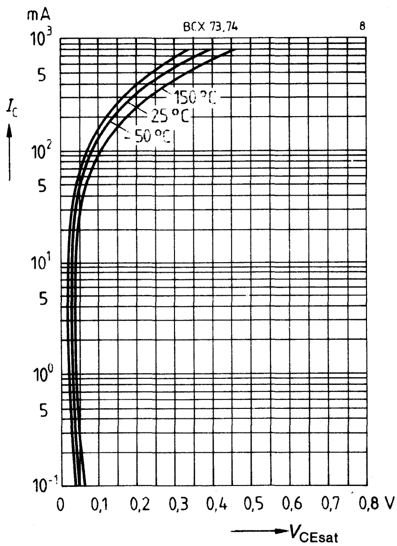
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 200$ MHz



Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 10$



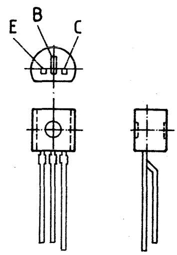
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$ (common emitter configuration)



PNP Silicon AF Transistors

BCX 75
BCX 76

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX 73, BCX 74 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BCX 75	Q62702-C636	BCX 76	Q62702-C637
BCX 75-16	Q62702-C636-S1	BCX 76-16	Q62702-C637-S1
BCX 75-25	Q62702-C636-S2	BCX 76-25	Q62702-C637-S2
BCX 75-40	Q62702-C636-S3	BCX 76-40	Q62702-C637-S3

Maximum Ratings

Description	Symbol	BCX 75	BCX 76	Unit
Collector-emitter voltage	V_{CEO}	32	45	V
Collector-base voltage	V_{CBO}	60	75	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

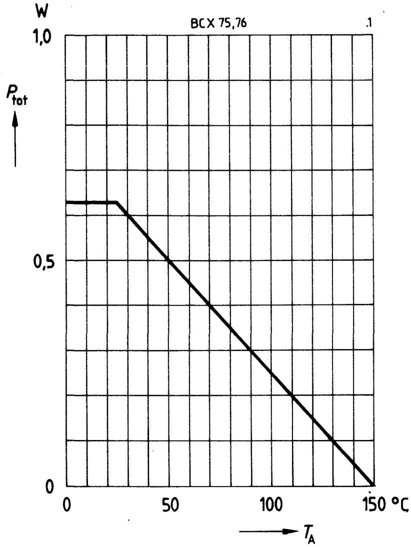
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
$I_C = 10$ mA	BCX 75		32	–	–	V
	BCX 76		45	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
$I_C = 100\ \mu A$	BCX 75		60	–	–	V
	BCX 76		75	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$		$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 32$ V	BCX 75		–	–	20	nA
$V_{CB} = 45$ V	BCX 76		–	–	20	nA
$V_{CB} = 32$ V, $T_A = 150\,°C$	BCX 75		–	–	5	µA
$V_{CB} = 45$ V, $T_A = 150\,°C$	BCX 76		–	–	5	µA
Emitter cutoff current $V_{EB} = 4$ V		I_{EBO}	–	–	100	nA
DC current gain		h_{FE}				
$I_C = 100\ \mu A$; $V_{CE} = 10$ V			35	–	–	–
$I_C = 1$ mA; $V_{CE} = 1$ V			50	–	–	–
$I_C = 10$ mA; $V_{CE} = 1$ V			75	–	–	–
$I_C = 100$ mA; $V_{CE} = 1$ V[1])						
	BCX 75-16; BCX 76-16		100	160	250	–
	BCX 75-25; BCX 76-25		160	250	400	–
	BCX 75-40; BCX 76-40		250	350	630	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1])			35	–	–	–
Collector-emitter saturation voltage[1])		V_{CEsat}				
$I_C = 100$ mA; $I_B = 10$ mA			–	–	0,25	V
$I_C = 500$ mA; $I_B = 50$ mA			–	–	0,6	V
Base-emitter saturation voltage[1]) $I_C = 500$ mA; $I_B = 50$ mA		V_{BEsat}	–	–	1,5	V

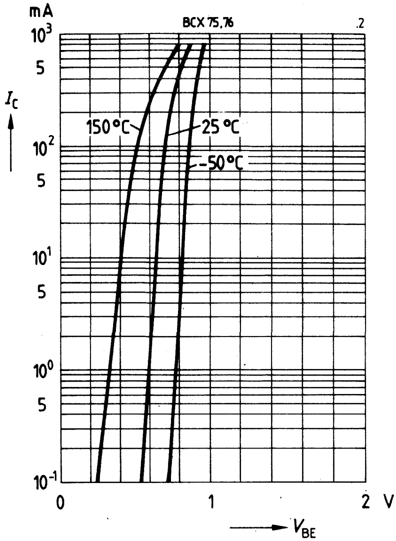
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	12	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	60	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

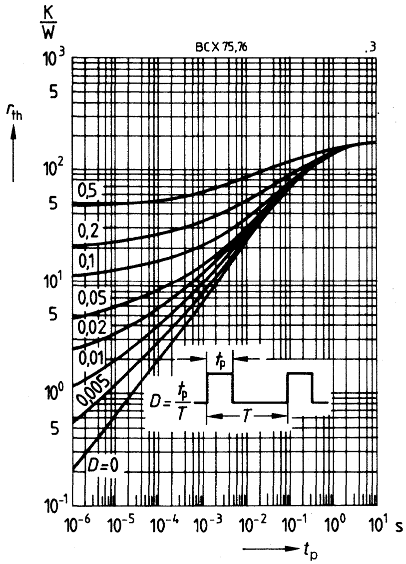
Total power dissipation $P_{tot} = f(T_A)$



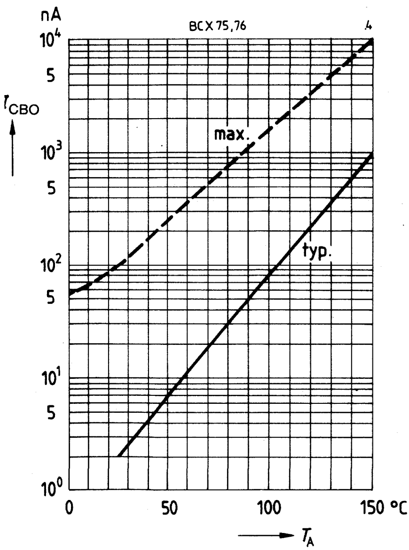
Collector current $I_C = f(V_{BE})$
$V_{CE} = 1$ V



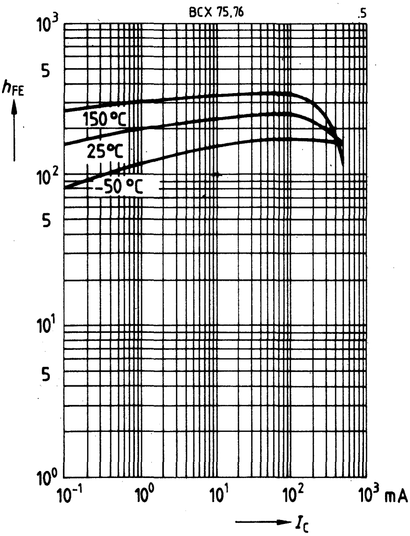
Pulse handling capability $r_{th} = f(t_p)$



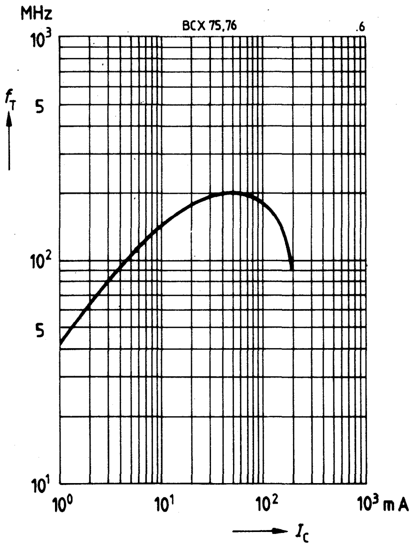
Collector cutoff current $I_{CBO} = f(T_A)$
$V_{CB} = 45$ V



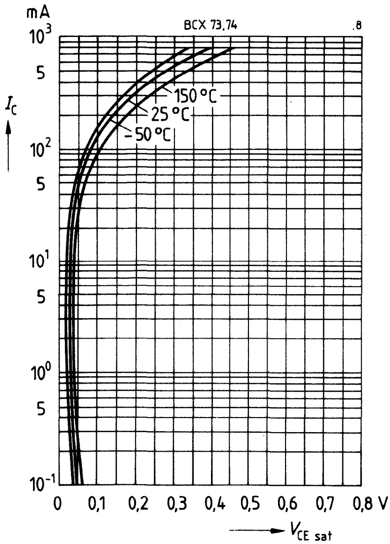
DC current gain $h_{FE} = f\,(I_C)$
$V_{CE} = 1$ V, T_A = parameter



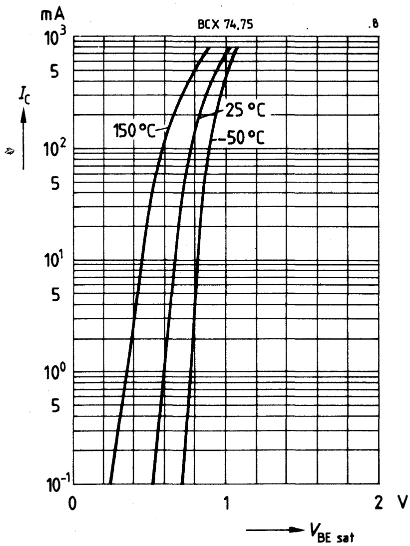
Transition frequency $f_T = f\,(I_C)$
$V_{CE} = 5$ V, $f = 20$ MHz



Collector-emitter saturation voltage $V_{CEsat} = f\,(I_C)$
$h_{FE} = 10$



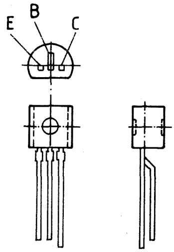
Base-emitter saturation voltage $V_{BEsat} = f\,(I_C)$
$h_{FE} = 10$



PNP Silicon AF Transistors

BCX 78
BCX 79

- High current gain
- Low collector-emitter saturation voltage
- Low noise at 1 kHz
- Low noise at low frequencies
- Complementary types: BCX 58, BCX 59 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BCX 78	Q62702-C717	BCX 79	Q62702-C718
BCX 78-VII	Q62702-C626	BCX 79-VII	Q62702-C630
BCX 78-VIII	Q62702-C627	BCX 79-VIII	Q62702-C631
BCX 78-IX	Q62702-C628	BCX 79-IX	Q62702-C632
BCX 78-X	Q62702-C629	BCX 79-X	Q62702-C633

Maximum Ratings

Description	Symbol	BCX 78	BCX 79	Unit
Collector-emitter voltage	V_{CEO}	32	45	V
Collector-base voltage	V_{CBO}	32	45	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	100		mA
Peak collector current	I_{CM}	200		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	500		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤250		K/W
junction – case	R_{thJC}	≤150		K/W

Electrical Characteristics

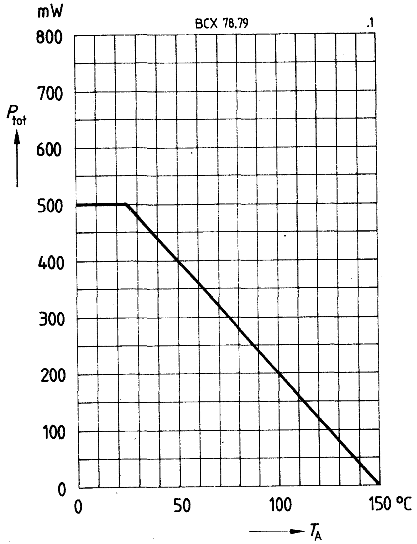
at T_A = 25 °C, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
I_C = 2 mA	BCX 78		32	–	–	V
	BCX 79		45	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
I_C = 10 µA	BCX 78		32	–	–	V
	BCX 79		45	–	–	V
Emitter-base breakdown voltage I_E = 1 µA		$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current		I_{CBO}				
V_{CB} = 32 V	BCX 78		–	–	20	nA
V_{CB} = 45 V	BCX 79		–	–	20	nA
V_{CB} = 32 V, T_A = 150 °C	BCX 78		–	–	10	µA
V_{CB} = 45 V, T_A = 150 °C	BCX 79		–	–	10	µA
Collector cutoff current		I_{CEX}				
V_{CE} = 32 V, V_{BE} = 0,2 V, T_A = 100 °C			–	–	20	µA
V_{CE} = 45 V, V_{BE} = 0,2 V, T_A = 100 °C			–	–	20	µA
Emitter cutoff current V_{EB} = 4 V		I_{EBO}	–	–	20	nA
DC current gain		h_{FE}				
I_C = 10 µA; V_{CE} = 5 V						
	BCX 78 VII, BCX 79 VII		20	140	–	–
	BCX 78 VIII, BCX 79 VIII		30	200	–	–
	BCX 78 IX, BCX 79 IX		40	270	–	–
	BCX 78 X, BCX 79 X		100	340	–	–
I_C = 2 mA; V_{CE} = 5 V						
	BCX 78 VII, BCX 79 VII		120	170	220	–
	BCX 78 VIII, BCX 79 VIII		180	250	310	–
	BCX 78 IX, BCX 79 IX		250	350	460	–
	BCX 78 X, BCX 79 X		380	500	630	–
I_C = 100 mA; V_{CE} = 1 V[1])						
	BCX 78 VII, BCX 79 VII		40	–	–	–
	BCX 78 VIII, BCX 79 VIII		45	–	–	–
	BCX 78 IX, BCX 79 IX		60	–	–	–
	BCX 78 X, BCX 79 X		60	–	–	–
Collector-emitter saturation voltage[1]) I_C = 100 mA; I_B = 2,5 mA		V_{CEsat}	–	–	0,6	V
Base-emitter saturation voltage[1]) I_C = 100 mA; I_B = 2,5 mA		V_{BEsat}	–	–	1	V
Base-emitter voltage		$V_{BE(on)}$				
I_C = 10 µA; V_{CE} = 5 V			–	0,52	–	V
I_C = 2 mA; V_{CE} = 5 V			0,55	0,65	0,75	V
I_C = 100 mA, V_{CE} = 1 V[1])			–	0,93	–	V

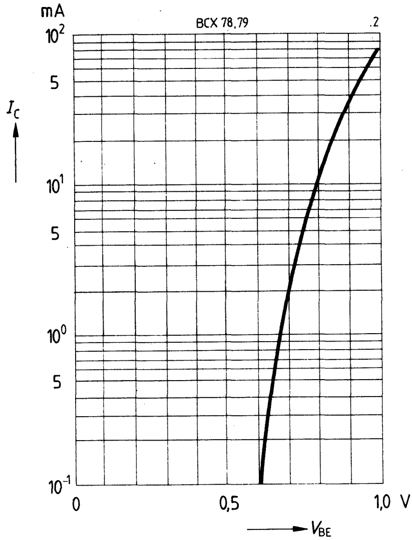
[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	–	250	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3	–	pF
Input capacitance $V_{EB} = 0{,}5$ V, $f = 1$ MHz	C_{ib}	–	10	–	pF
Short-circuit input impedance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{11e}				
BCX 78 VII, BCX 79 VII		–	2,7	–	kΩ
BCX 78 VIII, BCX 79 VIII		–	3,6	–	kΩ
BCX 78 IX, BCX 79 IX		–	4,5	–	kΩ
BCX 78 X, BCX 79 X		–	7,5	–	kΩ
Open-circuit reverse voltage transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{12e}				
BCX 78 VII, BCX 79 VII		–	1,5	–	10^{-4}
BCX 78 VIII, BCX 79 VIII		–	2	–	10^{-4}
BCX 78 IX, BCX 79 IX		–	2	–	10^{-4}
BCX 78 X, BCX 79 X		–	3	–	10^{-4}
Short-circuit forward current transfer ratio $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{21e}				
BCX 78 VII, BCX 79 VII		–	200	–	–
BCX 78 VIII, BCX 79 VIII		–	260	–	–
BCX 78 IX, BCX 79 IX		–	330	–	–
BCX 78 X, BCX 79 X		–	520	–	–
Open-circuit output admittance $I_C = 2$ mA, $V_{CE} = 5$ V, $f = 1$ kHz	h_{22e}				
BCX 78 VII, BCX 79 VII		–	18	–	µS
BCX 78 VIII, BCX 79 VIII		–	24	–	µS
BCX 78 IX, BCX 79 IX		–	30	–	µS
BCX 78 X, BCX 79 X		–	50	–	µS
Noise figure $I_C = 0{,}2$ mA, $V_{CE} = 5$ V, $R_S = 2$ kΩ $f = 1$ kHz, $\Delta f = 200$ Hz	F	–	2	–	dB

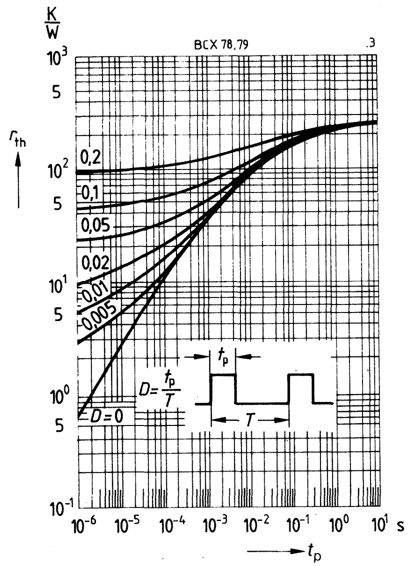
Total power dissipation $P_{tot} = f\,(T_A)$



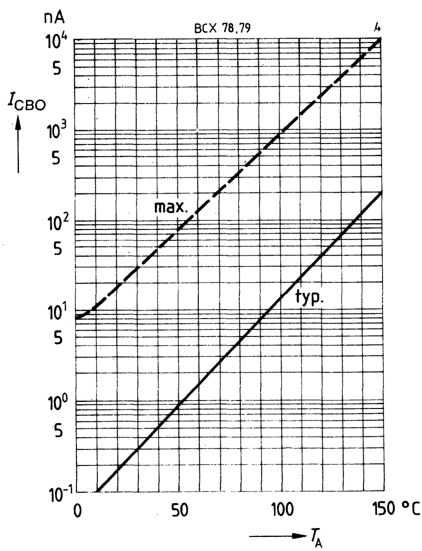
Collector current $I_C = f\,(V_{BE})$
$V_{CE} = 5$ V



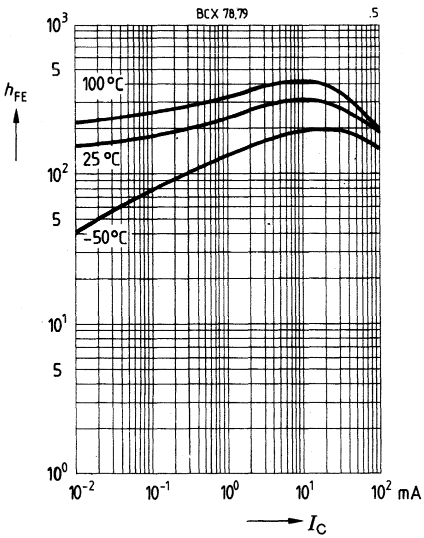
Perm. pulse handling capability $r_{th} = f\,(t_p)$



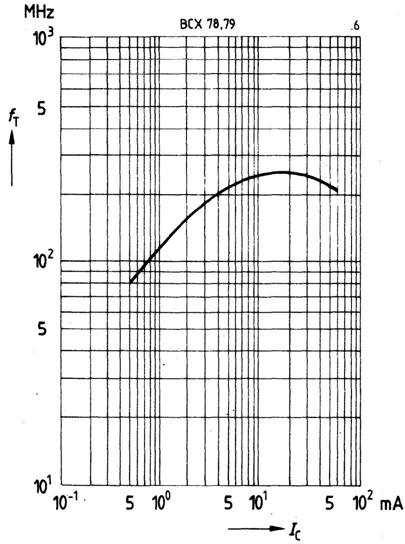
Collector cutoff current $I_{CBO} = f\,(T_A)$
for max. perm. reverse voltage



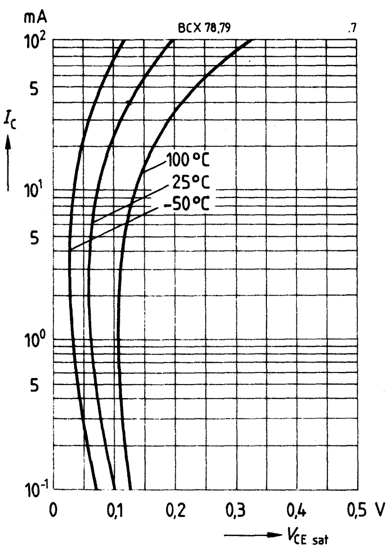
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5$ V (common emitter configuration)



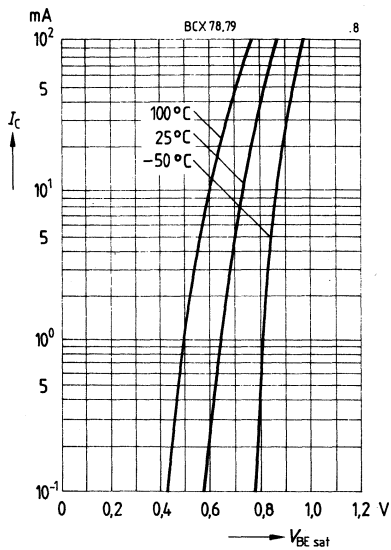
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 20$



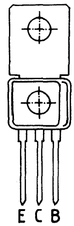
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 20$



NPN Silicon AF Transistors

BD 825 ...BD 829

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BD 826, BD 828, BD 830 (PNP)



Plastic package, TO-202
Approx. weight 15 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BD 825	Q62702-D1135	BD 827	Q62702-D1305	BD 829	Q62702-D1309
BD 825-6	Q62702-D149	BD 827-6	Q62702-D1306	BD 829-6	Q62702-D1310
BD 825-10	Q62702-D1213	BD 827-10	Q62702-D1113	BD 829-10	Q62702-D1311
BD 825-16	Q62702-D60				

Maximum Ratings

Description	Symbol	BD 825	BD 827	BD 829	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	45	60	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		1,5		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_C = 25\,°C$	P_{tot}		8		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤ 62,5		K/W
junction – case	R_{thJC}		≤ 15		K/W

Electrical Characteristics
at $T_A = 25\,°C$, unless otherwise specified

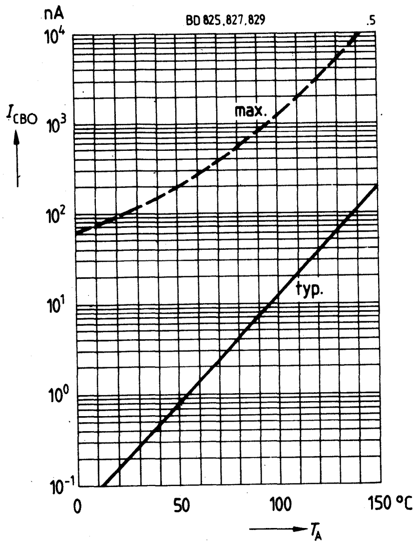
DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$				
BD 825		45	–	–	V
BD 827		60	–	–	V
BD 829		80	–	–	V
Collector-base breakdown voltage $I_C = 100\,\mu A$	$V_{(BR)CBO}$				
BD 825		45	–	–	V
BD 827		60	–	–	V
BD 829		100	–	–	V
Emitter-base breakdown voltage $I_E = 10\,\mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	100	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C =$ 5 mA; $V_{CE} = 2$ V		25	–	–	–
$I_C = 150$ mA; $V_{CE} = 2$ V					
BD 825-6, BD 827-6, BD 829-6		40	63	100	–
BD 825-10, BD 827-10, BD 829-10		63	100	160	–
BD 825-16		100	160	250	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1]		25	–	–	–
Collector-emitter saturation voltage[1] $I_C = 500$ mA; $I_B = 50$ mA	V_{CEsat}	–	–	0,5	V
Base-emitter voltage $I_C = 500$ mA; $V_{CE} = 2$ V	V_{BE}	–	–	1	V

AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz

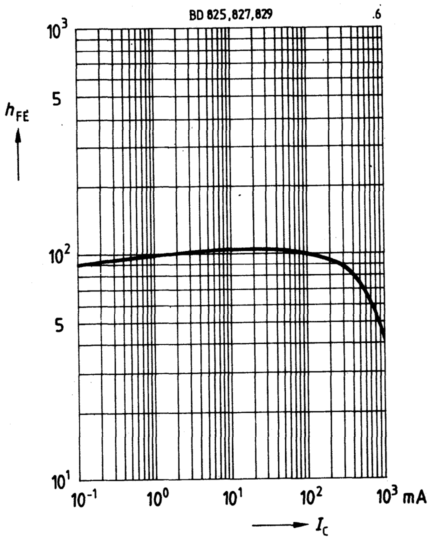
The **characteristic curves** $P_{tot} = f\,(T_A)$, $I_C = f\,(V_{CE})$, $r_{th} = f\,(t_p)$ and $I_C = f\,(V_{BE})$ are identical to those of the PNP transistors BD 826...BD 830 on page 103.

[1]) Pulse test: $t \leq 300\,\mu s$, $D \leq 2\%$

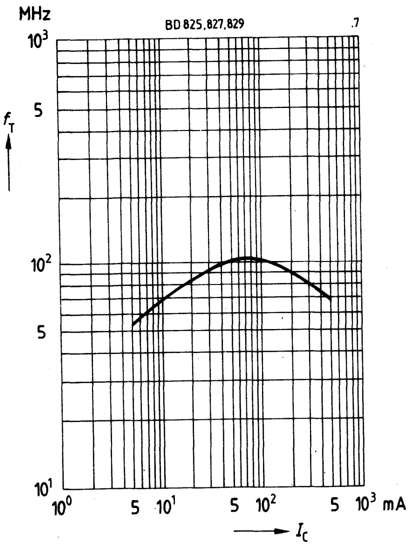
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



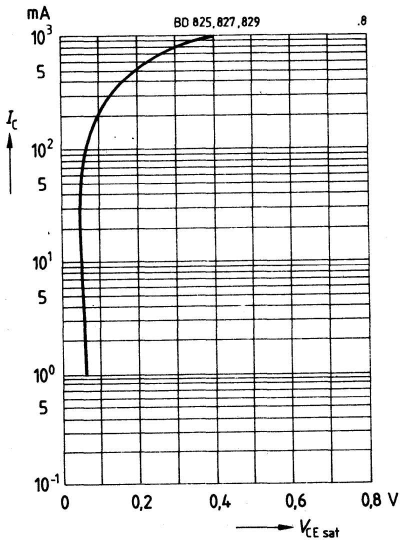
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 2$ V



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



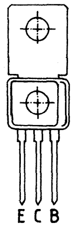
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$



PNP Silicon AF Transistors

BD 826 ...BD 830

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 825, BC 827, BC 829 (NPN)



Plastic package, TO-202
Approx. weight 15 g

Type	Ordering code	Type	Ordering Code	Type	Ordering Code
BD 826	Q62702-D1303	BD 828	Q62702-D1307	BD 830	Q62702-D1312
BD 826-6	Q62702-D1304	BD 828-6	Q62702-D1308	BD 830-6	Q62702-D1313
BD 826-10	Q62702-D1179	BD 828-10	Q62702-D61	BD 830-10	Q62702-D1238
BD 826-16	Q62702-D1257				

Maximum Ratings

Description	Symbol	BD 826	BD 828	BD 830	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	45	60	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		1,5		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_C = 25\,°C$	P_{tot}		8		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤62,5		K/W
junction – case	R_{thJC}		≤15		K/W

Electrical Characteristics

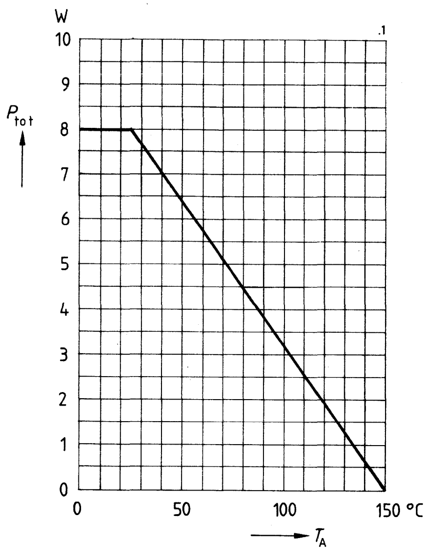
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$				
BD 826		45	–	–	V
BD 828		60	–	–	V
BD 830		80	–	–	V
Collector-base breakdown voltage $I_C = 100\,\mu A$	$V_{(BR)CBO}$				
BD 826		45	–	–	V
BD 828		60	–	–	V
BD 830		100	–	–	V
Emitter base breakdown voltage $I_E = 10\,\mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current	I_{CBO}				
$V_{CB} = 30$ V		–	–	100	nA
$V_{CB} = 30$ V, $T_A = 150\,°C$		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C =$ 5 mA; $V_{CE} = 2$ V		25	–	–	–
$I_C = 150$ mA; $V_{CE} = 2$ V					
BD 826-6, BD 828-6, BD 830-6		40	63	100	–
BD 826-10, BD 828-10, BD 830-10		63	100	160	–
BD 826-16		100	160	250	–
$I_C = 500$ mA; $V_{CE} = 2$ V[1])		25	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 500$ mA; $I_B = 50$ mA	V_{CEsat}	–	–	500	V
Base-emitter voltage[1]) $I_C = 500$ mA; $V_{CE} = 2$ V	V_{BE}	–	–	1	V

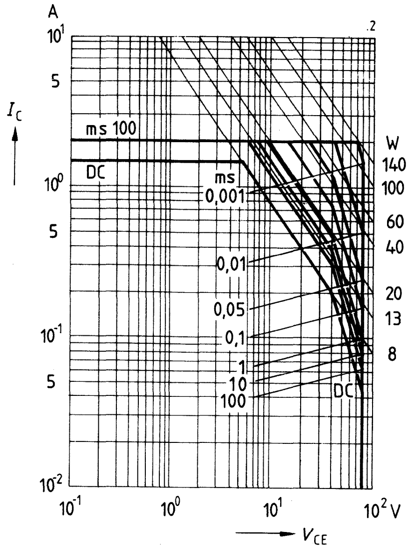
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	125	–	MHz

[1]) Pulse test: $t \leq 300\,\mu s$, $D \leq 2\%$

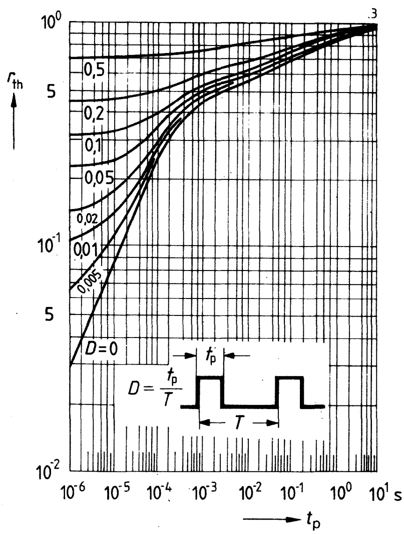
Total power dissipation $P_{tot} = f\,(T_A)$



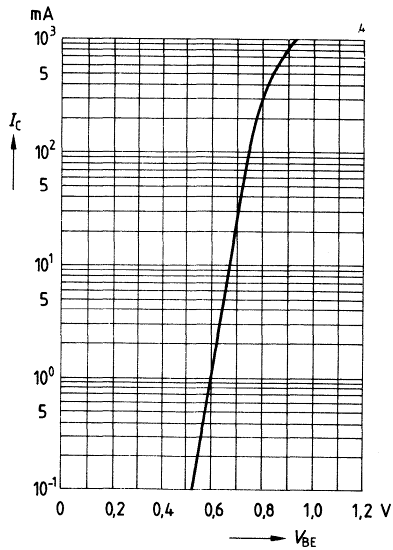
Operating range $I_C = f\,(V_{CE})$
$T_A = 25\,°C$, $D = 0$



Pulse handling capability $r_{th} = f\,(t_p)$
(standardized)

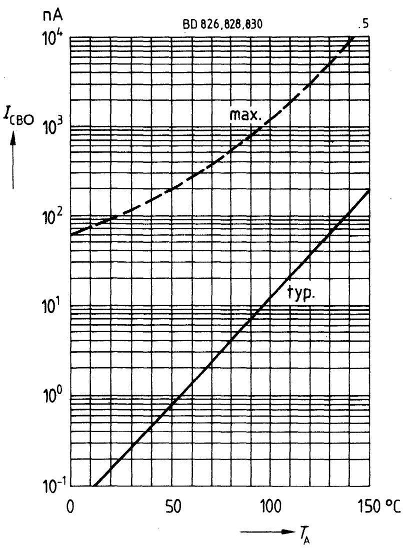


Collector current $I_C = f\,(V_{BE})$

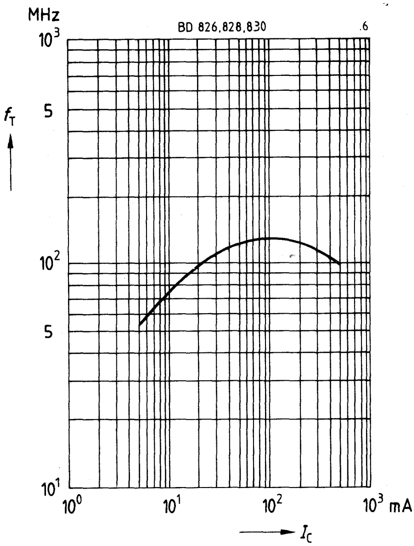


These **characteristic curves** also apply to the complementary NPN transistors BD 825...BD 829.

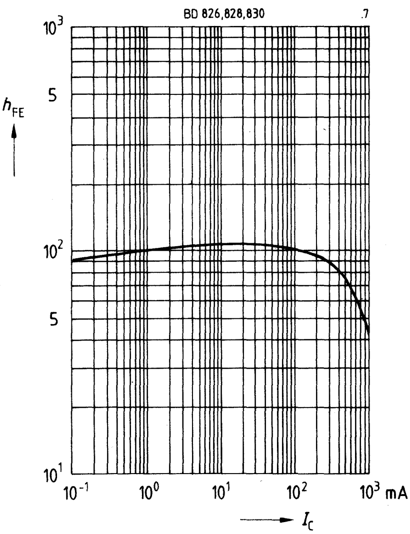
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



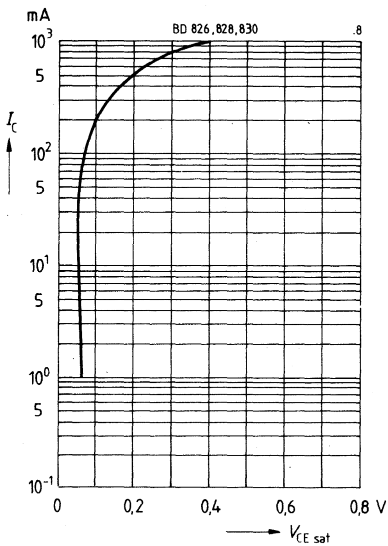
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 2$ V



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 10$

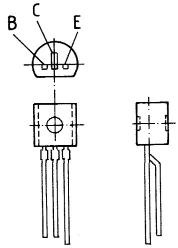


Transistors with High Reverse Voltage

NPN Silicon Transistors with High Reverse Voltage

BF 420
BF 422

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 421, BF 423 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BF 420	Q62702-F531	BF 422	Q62702-F495

Maximum Ratings

Description	Symbol	BF 420	BF 422	Unit
Collector-emitter voltage	V_{CEO}	–	250	V
Collector-emitter voltage $R_{BE} = 2.7\ k\Omega$	V_{CER}	300	–	V
Collector-base voltage	V_{CB}	300	250	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	50		mA
Peak base current	I_{BM}	100		mA
Total power dissipation $T_A = 25\ °C$	P_{tot}	830		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	–65...+150		°C
Thermal resistance junction – ambient	R_{thJA}	≤150		K/W

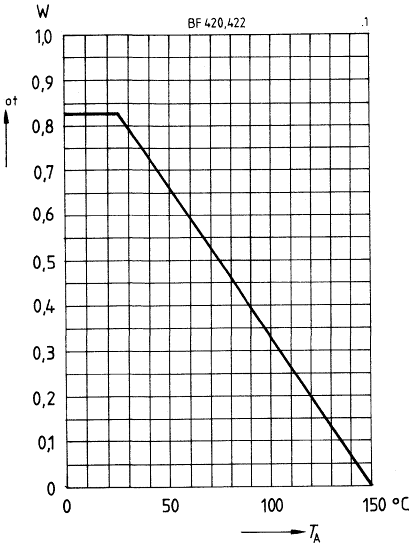
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage I_C = 1 mA	BF 422	$V_{(BR)CEO}$	250	–	–	V
Collector-emitter breakdown voltage I_C = 10 µA, R_{BE} = 2,7 kΩ	BF 420	$V_{(BR)CER}$	300	–	–	V
Collector-base breakdown voltage I_C = 10 µA	BF 420 BF 422	$V_{(BR)CBO}$	300 250	– –	– –	V V
Emitter-base breakdown voltage I_E = 10 µA		$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current V_{CB} = 200 V		I_{CBO}	–	–	10	nA
Collector cutoff current V_{CE} = 200 V, R_{BE} = 2,7 kΩ, T_A = 150 °C		I_{CER}	–	–	10	µA
Emitter cutoff current V_{EB} = 5 V		I_{EBO}	–	–	10	µA
DC current gain I_C = 100 µA; V_{CE} = 20 V I_C = 25 mA; V_{CE} = 20 V		h_{FE}	15 50	– –	– –	– –
Collector-emitter saturation voltage[1]) I_C = 25 mA; T_j = 150 °C		$V_{CEsatRF}$	–	–	20	V

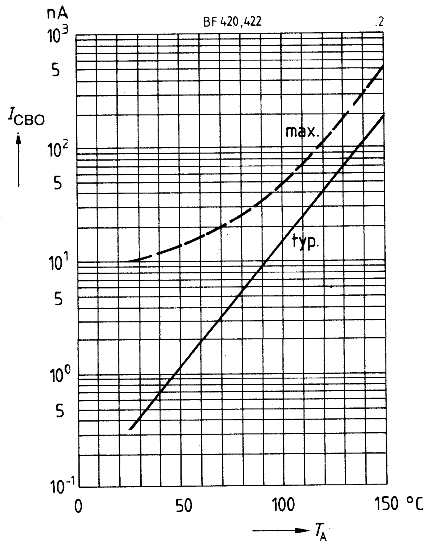
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency I_C = 10 mA, V_{CE} = 10 V, f = 20 MHz	f_T	–	100	–	MHz
Output capacitance V_{CB} = 30 V, f = 1 MHz	C_{ob}	–	0,8	–	pF

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

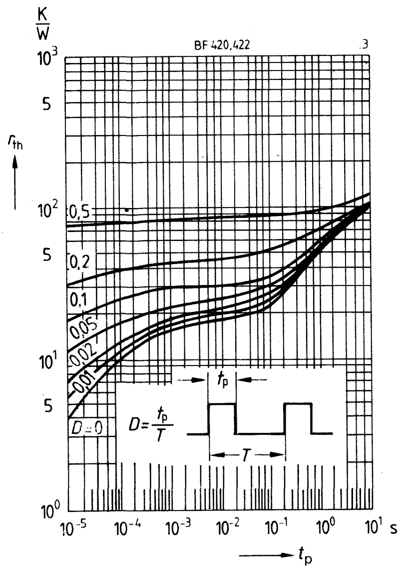
Total power dissipation $P_{tot} = f\ (T_A)$



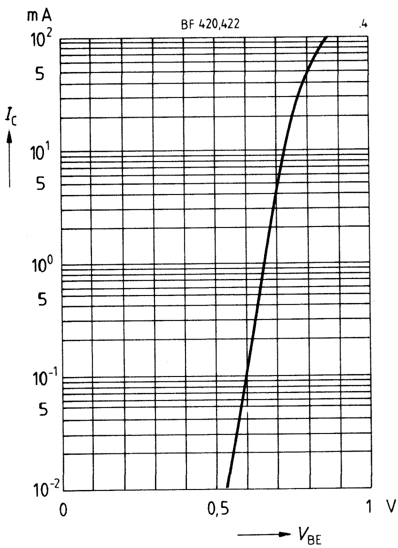
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 200\ V$



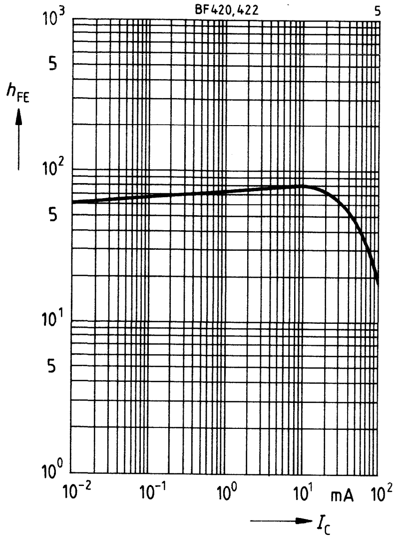
Pulse handling capability $r_{th} = f\ (t_p)$



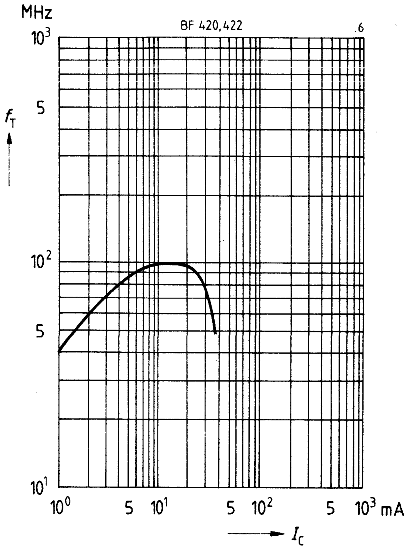
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 20\ V,\ T_A = 25\ °C$



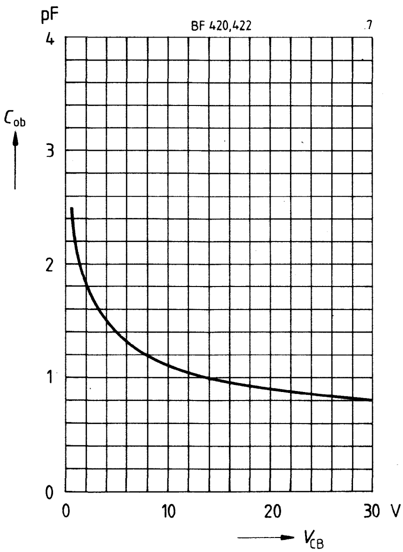
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 20$ V, $T_A = 25$ °C



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



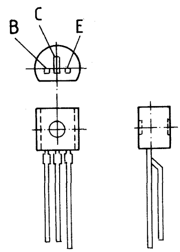
Output capacitance $C_{ob} = f\ (V_{CB})$
$I_C = 0$, $f = 1$ MHz



PNP Silicon Transistors with High Reverse Voltage

BF 421 BF 423

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 420, BF 422 (NPN)



Plastic package, TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BF 421	Q62702–F532	BF 423	Q62702–F496

Maximum Ratings

Description	Symbol	BF 421	BF 423	Unit
Collector-emitter voltage	V_{CEO}	–	250	V
Collector-emitter voltage $R_{BE} = 2.7\ k\Omega$	V_{CER}	300	–	V
Collector-base voltage	V_{CBO}	300	250	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	50		mA
Peak base current	I_{BM}	100		mA
Total power dissipation $T_A = 25\ °C$	P_{tot}	830		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤150		K/W

Electrical Characteristics

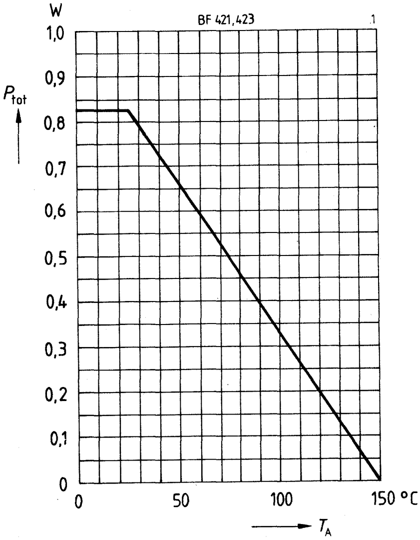
at $T_A = 25$ °C, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 1$ mA BF 423	$V_{(BR)CEO}$	250	–	–	V
Collector-emitter breakdown voltage $I_C = 10$ µA, $R_{BE} = 2{,}7$ kΩ BF 421	$V_{(BR)CER}$	300	–	–	V
Collector-base breakdown voltage $I_C = 10$ µA BF 421 BF 423	$V_{(BR)CBO}$	300 250	– –	– –	V V
Emitter-base breakdown voltage $I_E = 10$ µA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CB} = 200$ V	I_{CBO}	–	–	10	nA
Collector cutoff current $V_{CE} = 200$ V, $R_{BE} = 2{,}7$ kΩ, $T_A = 150$ °C	I_{CER}	–	–	10	µA
Emitter cutoff current $V_{EB} = 5$ V	I_{EBO}	–	–	10	µA
DC current gain $I_C = 100$ µA; $V_{CE} = 20$ V $I_C = 25$ mA; $V_{CE} = 20$ V	h_{FE}	15 50	– –	– –	– –
Collector-emitter saturation voltage[1]) $I_C = 25$ mA; $T_j = 150$ °C	$V_{CEsatRF}$	–	–	20	V

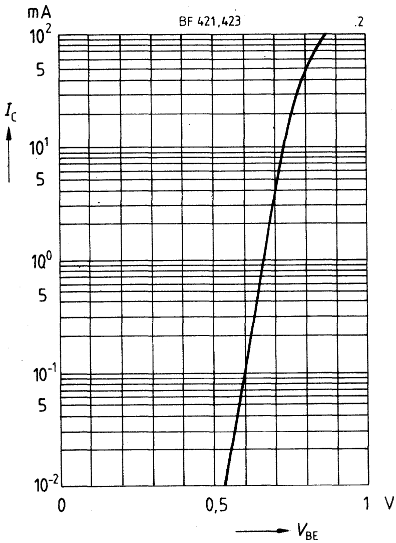
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	0,8	–	pF

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

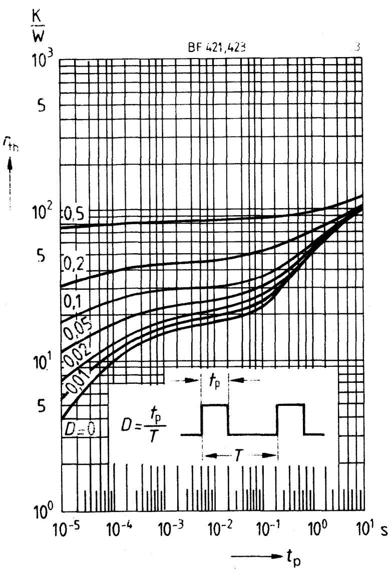
Total power dissipation $P_{tot} = f\,(T_A)$



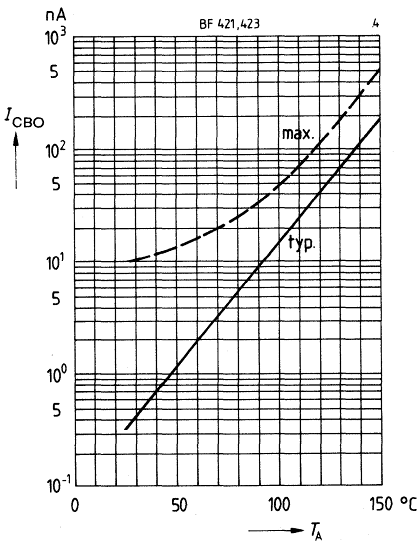
Collector current $I_C = f\,(V_{BE})$
$V_{CE} = 20$ V, $T_A = 25$ °C



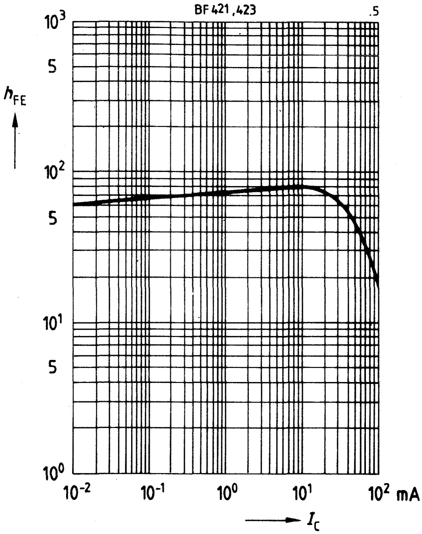
Pulse handling capability $r_{th} = f\,(t_p)$



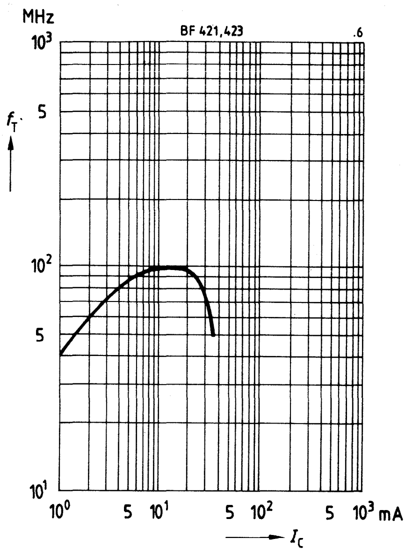
Collector cutoff current $I_{CBO} = f\,(T_A)$
$V_{CB} = 200$ V



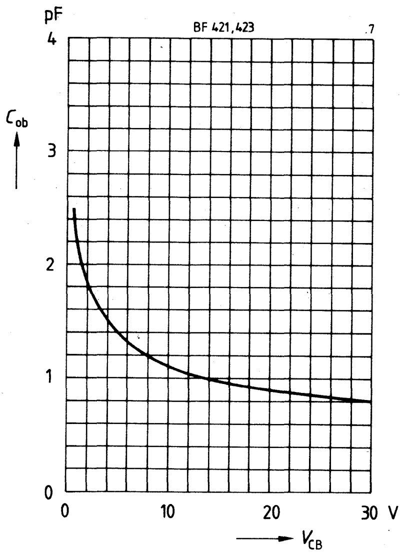
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 20$ V, $T_A = 25$ °C



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



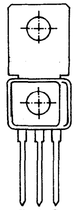
Output capacitance $C_{ob} = f\ (V_{CB})$
$I_C = 0$, $f = 1$ MHz



NPN Silicon Transistors with High Reverse Voltage

BF 857 ...BF 859

- High breakdown voltage
- Low collector-emitter saturation voltage



Plastic package, TO-202
Approx. weight 15 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BF 857	Q62702–F784	BF 858	Q62702–F785	BF 859	Q62702–F786

Maximum Ratings

Description	Symbol	BF 857	BF 858	BF 859	Unit
Collector-emitter voltage	V_{CEO}	160	250	300	V
Collector-base voltage	V_{CBO}	160	250	300	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		200		mA
Peak collector current	I_{CM}		500		mA
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation	P_{tot}				
$T_A = 25\,°C$			1,8		W
$T_C = 100\,°C$			2,5		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤70		K/W
junction – case	R_{thJC}		≤20		K/W

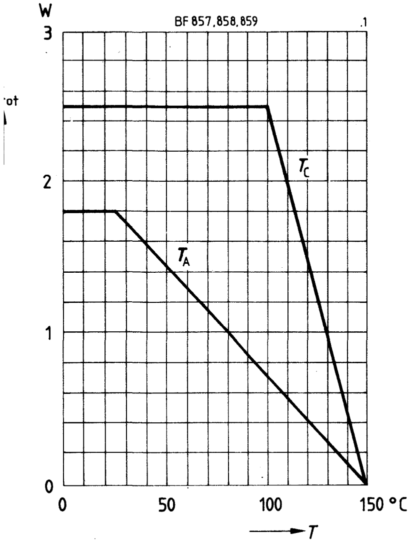
Electrical Characteristics
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
$I_C = 10$ mA	BF 857		160	–	–	V
	BF 858		250	–	–	V
	BF 859		300	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
$I_C = 100\ \mu A$	BF 857		160	–	–	V
	BF 858		250	–	–	V
	BF 859		300	–	–	V
Emitter-base breakdown voltage $I_E = 100\ \mu A$		$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 100$ V	BF 857		–	–	50	nA
$V_{CB} = 200$ V	BF 858		–	–	50	nA
$V_{CB} = 250$ V	BF 859		–	–	50	nA
$V_{CB} = 100$ V, $T_A = 150\,°C$	BF 857		–	–	20	µA
$V_{CB} = 200$ V, $T_A = 150\,°C$	BF 858		–	–	20	µA
$V_{CB} = 250$ V, $T_A = 150\,°C$	BF 859		–	–	20	µA
Emitter cutoff current $V_{EB} = 3$ V		I_{EBO}	–	–	50	nA
DC current gain $I_C = 30$ mA; $V_{CE} = 10$ V[1])		h_{FE}	25	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 30$ mA; $I_B = 6$ mA		V_{CEsat}	–	–	1	V

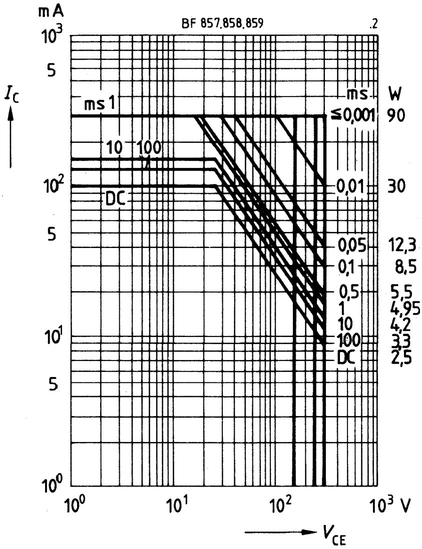
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	5,5	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

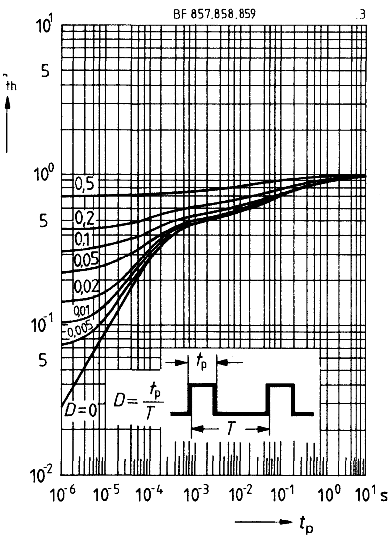
Total power dissipation $P_{tot} = f\,(T)$



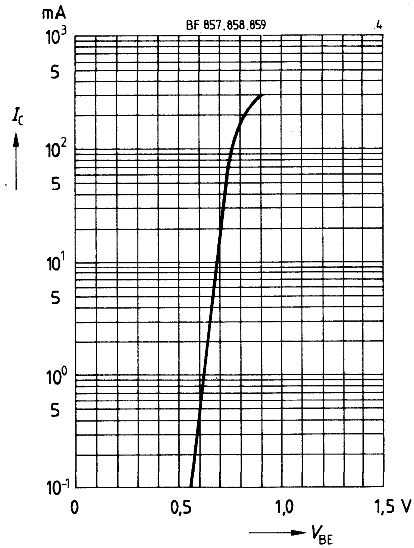
Perm. operating range $I_C = f\,(V_{CE})$
$T_A = 100\,°C$, $D = 0$



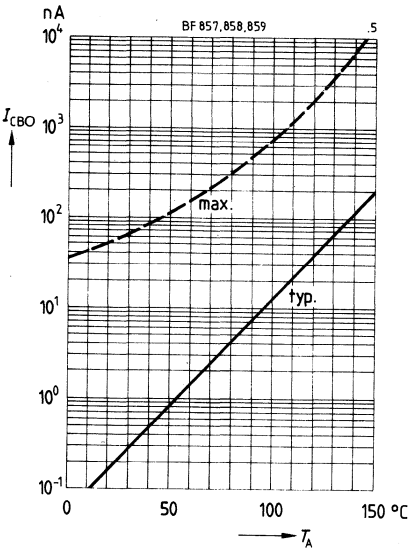
Pulse handling capability $r_{th} = f\,(t_p)$
(standardized)



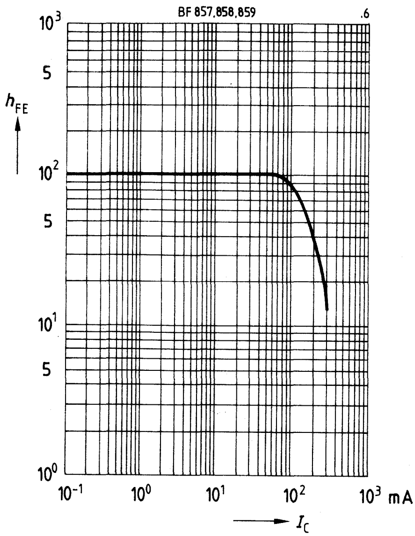
Collector current $I_C = f\,(V_{BE})$
$V_{CE} = 10\,V$



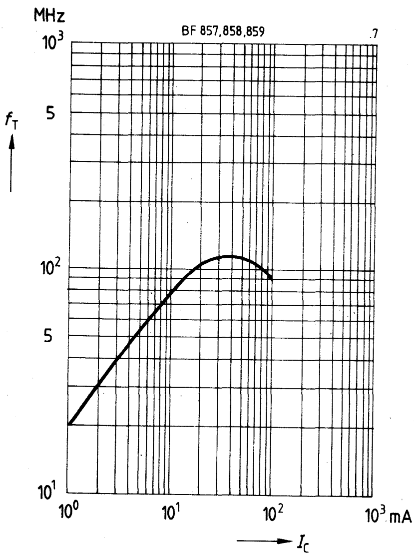
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 100$ V/200 V/250 V



DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 10$ V, $T_A = 25$ °C



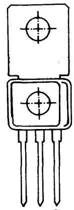
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



NPN Silicon Transistors with High Reverse Voltage

BF 869 ...BF 881

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 870, BF 872 (PNP)



Plastic package, TO-202
Approx. weight 15 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BF 869	Q62702-F683	BF 871	Q62702-F676	BF 881	Q62702-F794

Maximum Ratings

Description	Symbol	BF 869	BF 871	BF 881	Unit
Collector-emitter voltage	V_{CEO}	250	–	–	V
Collector-emitter voltage $R_{BE} = 2.7\ k\Omega$	V_{CER}	–	300	400	V
Collector-base voltage	V_{CBO}	250	300	400	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		50		mA
Peak base current	I_{BM}		100		mA
Total power dissipation	P_{tot}				
$T_A = 40\ °C$			1,6		W
$T_C = 110\ °C$			1,6		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient	R_{thJA}		≤70		K/W
junction – case	R_{thJC}		≤25		K/W

Electrical Characteristics

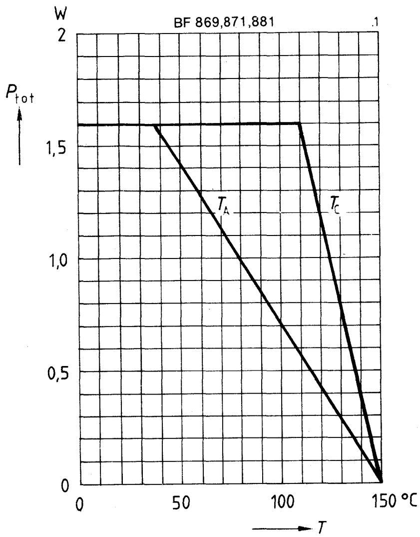
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 1$ mA BF 869	$V_{(BR)CEO}$	250	–	–	V
Collector-emitter breakdown voltage $I_C = 10\,\mu A$ BF 871 BF 881	$V_{(BR)CER}$	300 400	– –	– –	V V
Collector-base breakdown voltage $I_C = 10\,\mu A$ BF 869 BF 871 BF 881	$V_{(BR)CBO}$	250 300 400	– – –	– – –	V V V
Emitter-base breakdown voltage $I_E = 10\,\mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CB} = 200$ V BF 869, BF 871 $V_{CB} = 350$ V BF 881	I_{CBO}	–	–	10 100	nA nA
Collector cutoff current $V_{CE} = 200$ V, $R_{BE} = 2{,}7\,k\Omega$, $T_A = 150\,°C$ BF 869, BF 871 $V_{CE} = 350$ V, $R_{BE} = 2{,}7\,k\Omega$, $T_A = 150\,°C$ BF 881	I_{CER}	– –	– –	10 10	µA µA
Emitter cutoff current $V_{EB} = 5$ V	I_{EBO}	–	–	10	µA
DC current gain $I_C = 25$ mA; $V_{CE} = 20$ V BF 869 BF 871, BF 881	h_{FE}	50 40	– –	– –	– –
Collector-emitter saturation voltage[1]) $I_C = 25$ mA; $T_j = 150\,°C$	$V_{CEsatRF}$	–	–	20	V

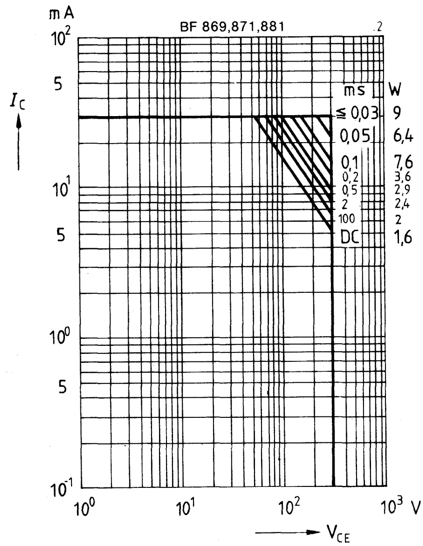
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 10$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	1,2	–	pF

[1]) Pulse test: $t \leq 300\,\mu s$, $D \leq 2\%$

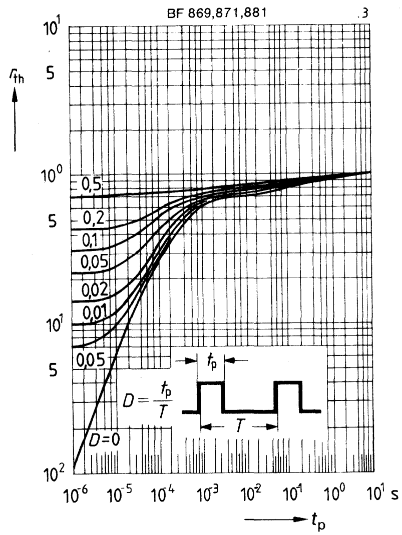
Total power dissipation $P_{tot} = f(T)$



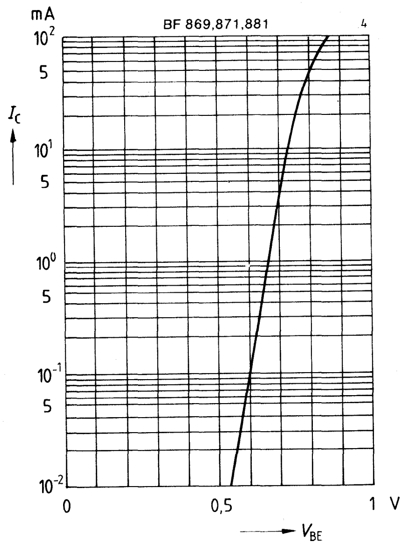
Operating range $I_C = f(V_{CE})$
$T_A \leq 110$ °C, $D = 0{,}01$



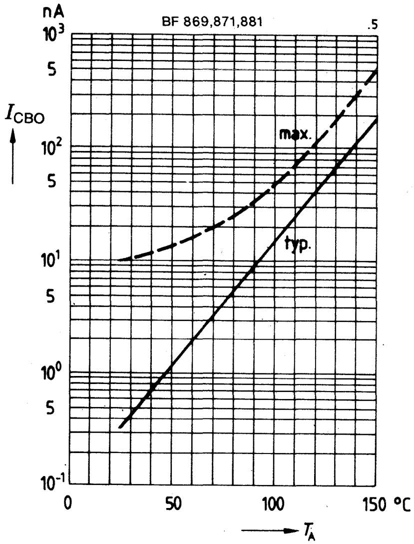
Pulse handling capability $r_{th} = f(t_p)$
(standardized)



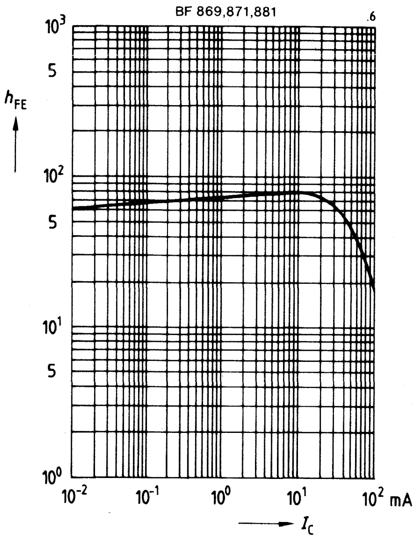
Collector current $I_C = f(V_{BE})$
$V_{CE} = 20$ V



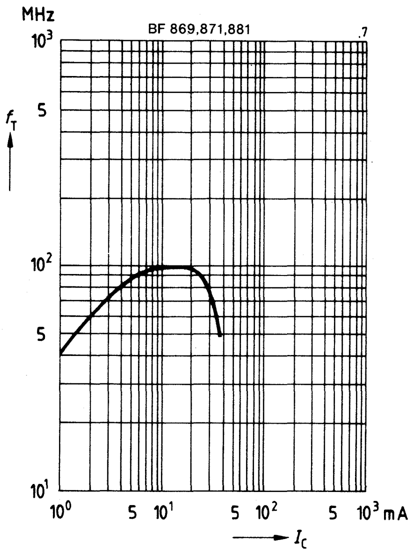
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 200$ V, 350 V



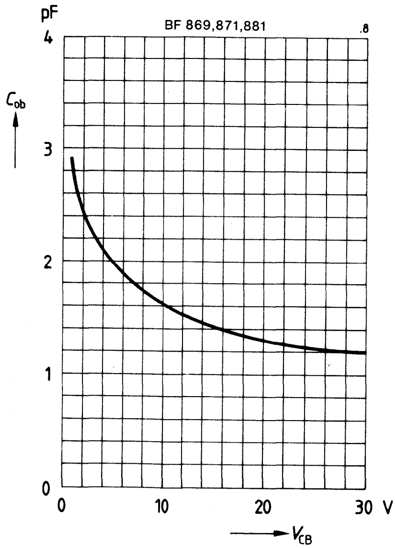
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 20$ V, $T_A = 25$ °C



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



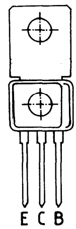
Output capacitance $C_{ob} = f\ (V_{CB})$
$I_C = 0$, $f = 1$ MHz



PNP Silicon Transistors with High Reverse Voltage

BF 870
BF 872

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 869, BF 871 (NPN)



Plastic package, TO-202
Approx. weight 15 g

Type	Ordering code	Type	Ordering code
BF 870	Q62702–F685	BF 872	Q62702–F677

Maximum Ratings

Description	Symbol	BF 870	BF 872	Unit
Collector-emitter voltage	V_{CEO}	250	–	V
Collector-emitter voltage $R_{BE} = 2.7$ kΩ	V_{CER}	–	300	V
Collector-base voltage	V_{CBO}	250	300	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	50		mA
Peak base current	I_{BM}	100		mA
Total power dissipation	P_{tot}			
$T_A = 40\,°C$		1,6		W
$T_C = 110\,°C$		1,6		W
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	–65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤70		K/W
junction – case	R_{thJC}	≤25		K/W

Electrical Characteristics

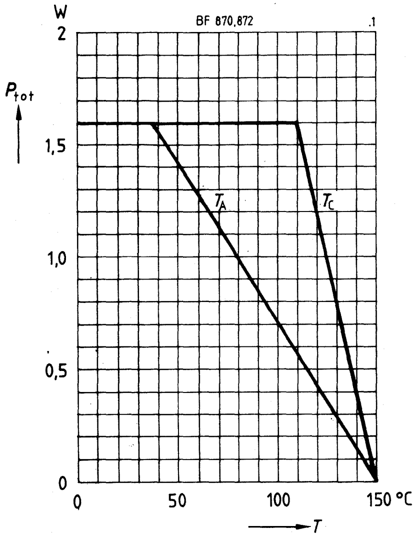
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 1$ mA BF 870	$V_{(BR)CEO}$	250	–	–	V
Collector-emitter breakdown voltage $I_C = 10\ \mu A$ BF 872	$V_{(BR)CER}$	300	–	–	V
Collector-base breakdown voltage $I_C = 10\ \mu A$ BF 870 BF 872	$V_{(BR)CBO}$	250 300	– –	– –	V V
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CB} = 200$ V	I_{CBO}	–	–	10	nA
Collector cutoff current $V_{CE} = 200$ V, $R_{BE} = 2{,}7\ k\Omega$, $T_A = 150\,°C$	I_{CER}	–	–	10	µA
Emitter cutoff current $V_{EB} = 5$ V	I_{EBO}	–	–	10	µA
DC current gain $I_C = 25$ mA; $V_{CE} = 20$ V BF 870 BF 872	h_{FE}	50 40	– –	– –	– –
Collector-emitter saturation voltage[1]) $I_C = 25$ mA; $T_j = 150\,°C$	$V_{CEsatRF}$	–	–	20	V

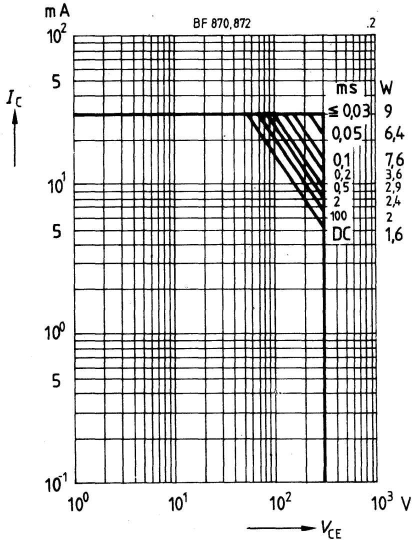
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 10$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	100	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	1,2	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

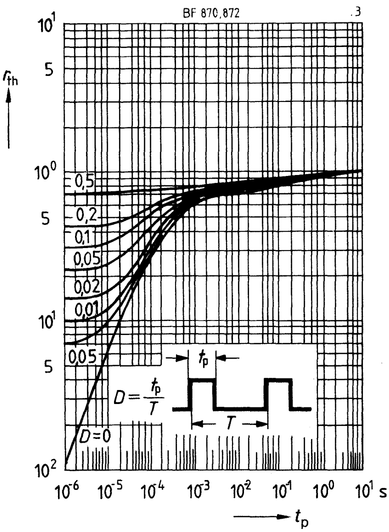
Total power dissipation $P_{tot} = f\,(T)$



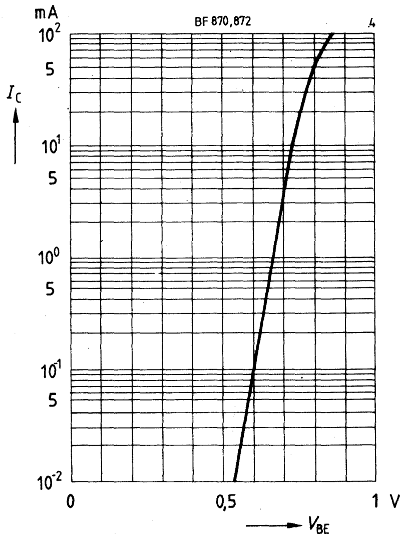
Operating range $I_C = f\,(V_{CE})$
$T_A \leq 110\,°C$, $D = 0{,}01$



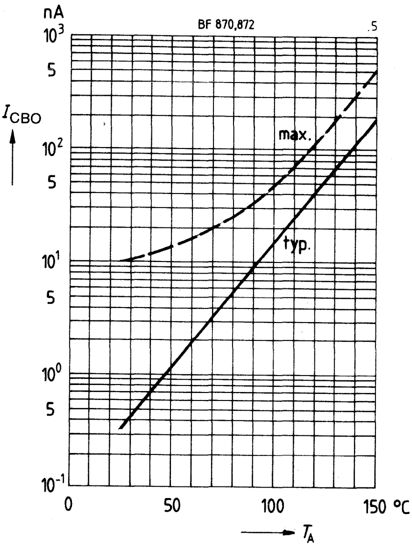
Pulse handling capability $r_{th} = f\,(t_p)$
(standardized)



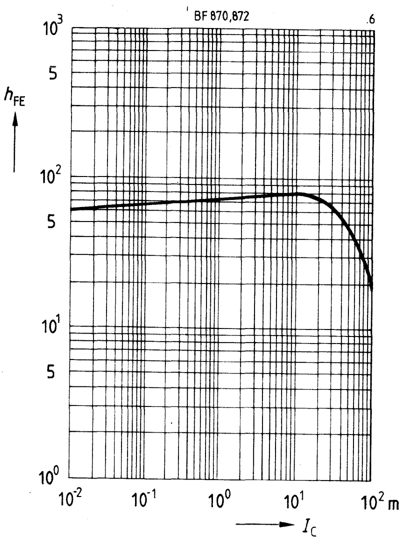
Collector current $I_C = f\,(V_{BE})$
$V_{CE} = 20$ V, $T_A = 25\,°C$



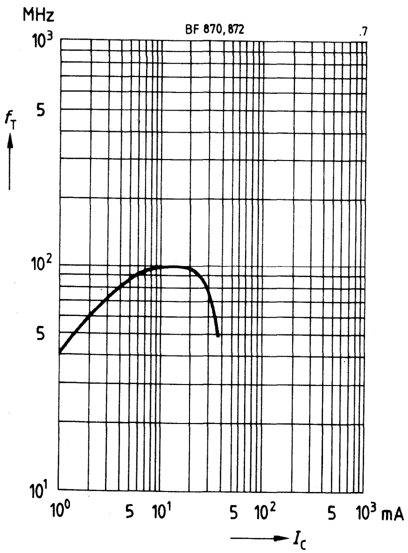
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 200$ V



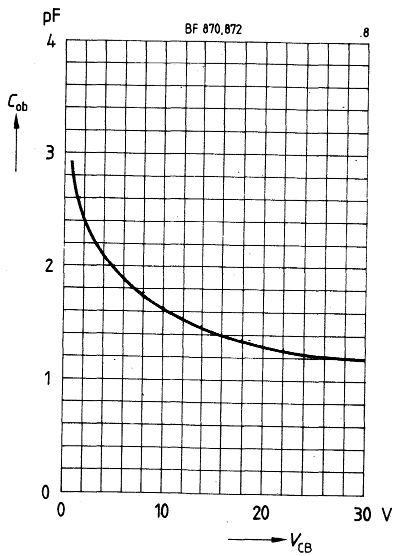
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 20$ V, $T_A = 25$ °C



Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



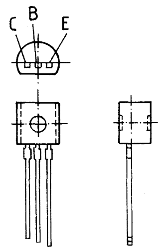
Output capacitance $C_{ob} = f\ (V_{CB})$
$I_C = 0$, $f = 1$MHz



NPN Silicon Transistors with High Reverse Voltage

BFP 22
BFP 25

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BFP 23, BFP 26 (PNP)



Plastic package, TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
S BFP 22	Q62702-F621	BFP 25	Q62702-F721

Maximum Ratings

Description	Symbol	BFP 22	BFP 25	Unit
Collector-emitter voltage	V_{CEO}	200	300	V
Collector-base voltage	V_{CBO}	200	300	V
Emitter-base voltage	V_{EBO}	6		V
Collector current	I_C	200		mA
Peak collector current	I_{CM}	500		mA
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

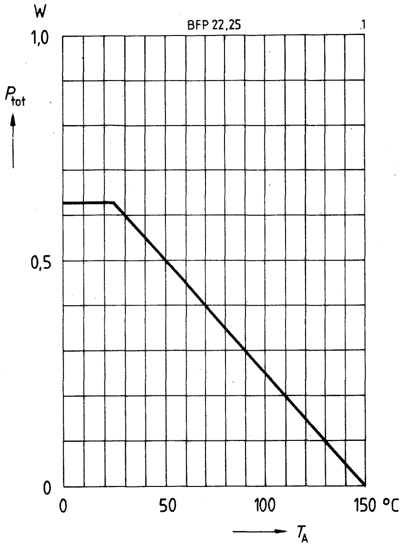
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
$I_C = 1$ mA	BFP 22		200	–	–	V
	BFP 25		300	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
$I_C = 100\ \mu A$	BFP 22		200	–	–	V
	BFP 25		300	–	–	V
Emitter-base breakdown voltage $I_E = 100\ \mu A$		$V_{(BR)EBO}$	6	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 160$ V	BFP 22		–	–	100	nA
$V_{CB} = 250$ V	BFP 25		–	–	100	nA
$V_{CB} = 160$ V, $T_A = 150\,°C$	BFP 22		–	–	20	µA
$V_{CB} = 250$ V, $T_A = 150\,°C$	BFP 25		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V		I_{EBO}	–	–	100	nA
DC current gain		h_{FE}				
$I_C = 1$ mA; $V_{CE} = 10$ V			25	–	–	–
$I_C = 10$ mA; $V_{CE} = 10$ V[1]			40	–	–	–
$I_C = 30$ mA; $V_{CE} = 10$ V[1]	BFP 22		50	–	–	–
	BFP 25		40	–	–	–
Collector-emitter saturation voltage[1]		V_{CEsat}				
$I_C = 20$ mA; $I_B = 2$ mA	BFP 25		–	–	0,5	V
	BFP 22		–	–	0,4	V
Base-emitter saturation voltage[1] $I_C = 20$ A; $I_B = 2$ mA		V_{BEsat}	–	–	0,9	V

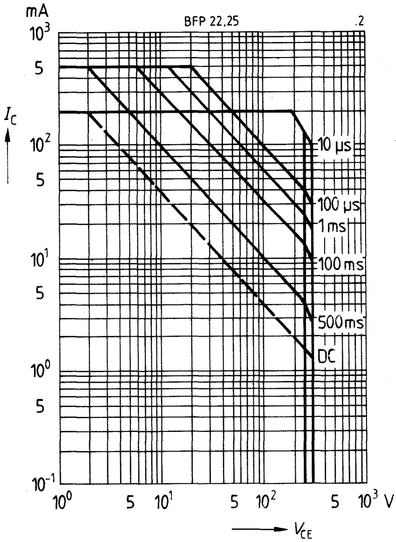
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	70	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	1,5	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

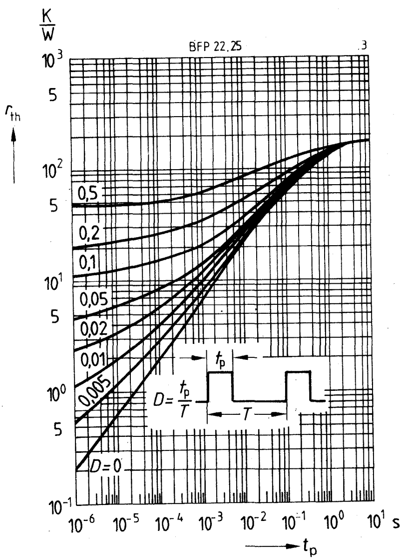
Total power dissipation $P_{tot} = f\ (T_A)$



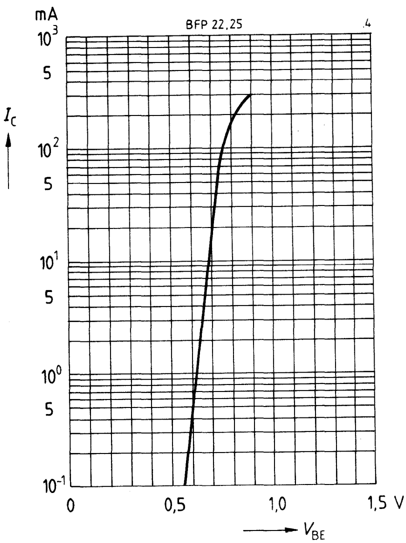
Operating range $I_C = f\ (V_{CE})$
$D = 0$, $T_A = 25\ °C$



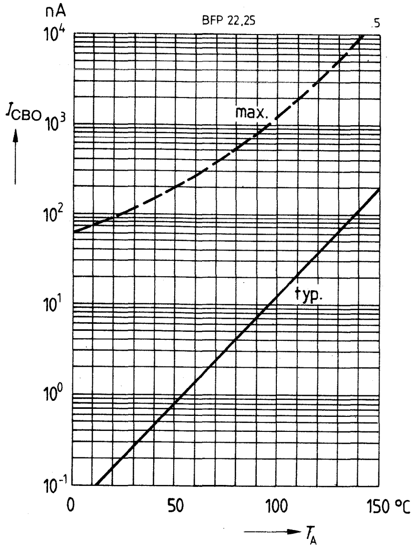
Pulse handling capability $r_{th} = f\ (t_p)$



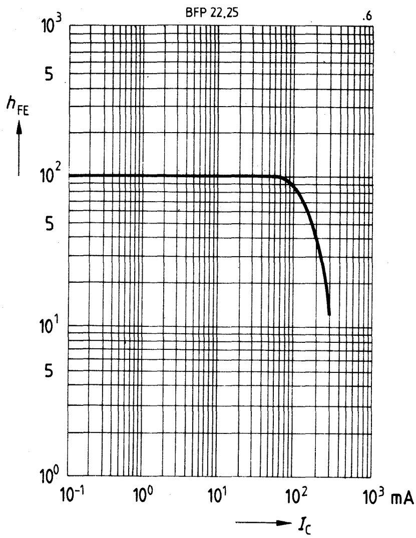
Collector current $I_C = f\ (V_{BE})$
$V_{CE} = 10$ V, $T_A = 25\ °C$



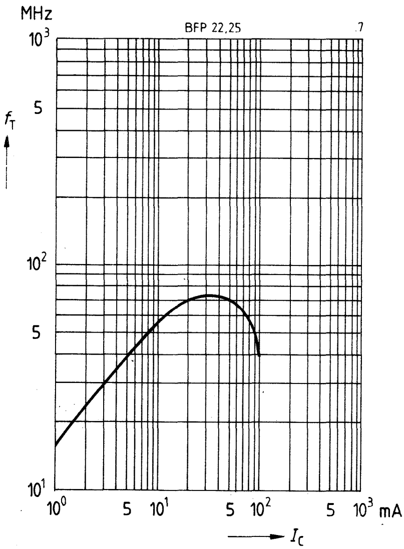
Collector cutoff current $I_{CBO} = f\,(T)$
$V_{CB} = 160$ V, 250 V



DC current gain $h_{FE} = f\,(I_C)$
$V_{CE} = 10$ V, $T_A = 25$ °C



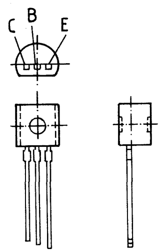
Transition frequency $f_T = f\,(I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



PNP Silicon Transistors with High Reverse Voltage

BFP 23
BFP 26

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BFP 22, BFP 25 (NPN)



Plastic package, TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
S BFP 23	Q62702–F622	BFP 26	Q62702–F722

Maximum Ratings

Description	Symbol	BFP 23	BFP 26	Unit
Collector-emitter voltage	V_{CEO}	200	300	V
Collector-base voltage	V_{CBO}	200	300	V
Emitter-base voltage	V_{EBO}	6		V
Collector current	I_C	200		mA
Peak collector current	I_{CM}	500		mA
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

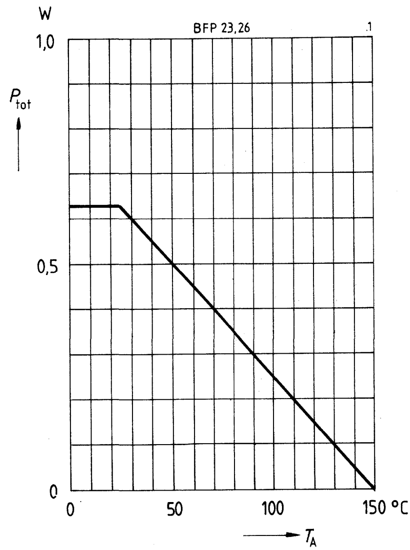
at $T_A = 25$ °C, unless otherwise specified

DC Characteristics		Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				
$I_C = 1$ mA	BFP 23		200	–	–	V
	BFP 26		300	–	–	V
Collector-base breakdown voltage		$V_{(BR)CBO}$				
$I_C = 100$ µA	BFP 23		200	–	–	V
	BFP 26		300	–	–	V
Emitter-base breakdown voltage $I_E = 100$ µA		$V_{(BR)EBO}$	6	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 160$ V	BFP 23		–	–	100	nA
$V_{CB} = 250$ V	BFP 26		–	–	100	nA
$V_{CB} = 160$ V, $T_A = 150$ °C	BFP 23		–	–	20	µA
$V_{CB} = 250$ V, $T_A = 150$ °C	BFP 26		–	–	20	µA
Emitter cutoff current $V_{EB} = 3$ V		I_{EBO}	–	–	100	nA
DC current gain		h_{FE}				
$I_C = 1$ mA; $V_{CE} = 10$ V			25	–	–	–
$I_C = 10$ mA; $V_{CE} = 10$ V[1]			40	–	–	–
$I_C = 30$ mA; $V_{CE} = 10$ V[1]	BFP 23		50	–	–	–
	BFP 26		40	–	–	–
Collector-emitter saturation voltage[1]		V_{CEsat}				
$I_C = 20$ mA; $I_B = 2$ mA	BFP23		–	–	0,4	V
	BFP26		–	–	0,5	V
Base-emitter saturation voltage[1] $I_C = 20$ A; $I_B = 2$ mA		V_{BEsat}	–	–	0,9	V

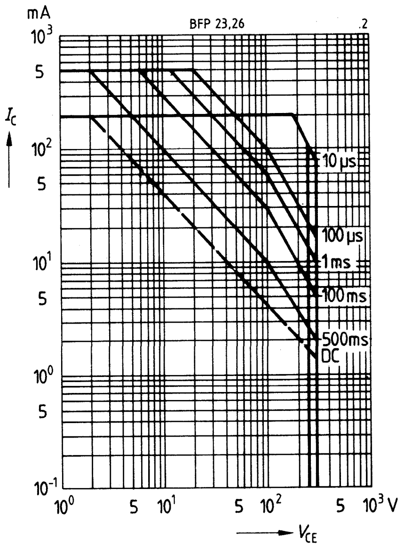
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 20$ mA, $V_{CE} = 10$ V, $f = 20$ MHz	f_T	–	70	–	MHz
Output capacitance $V_{CB} = 30$ V, $f = 1$ MHz	C_{ob}	–	1,5	–	pF

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

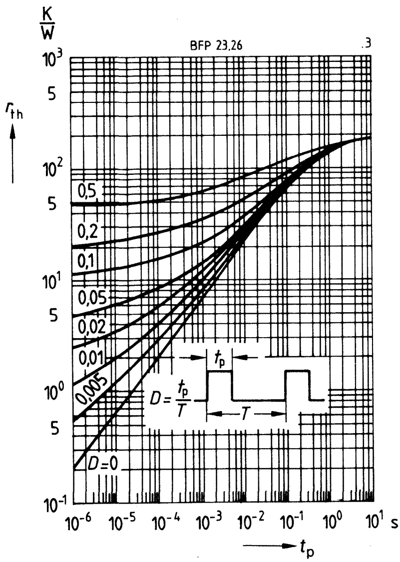
Total power dissipation $P_{tot} = f\,(T_A)$



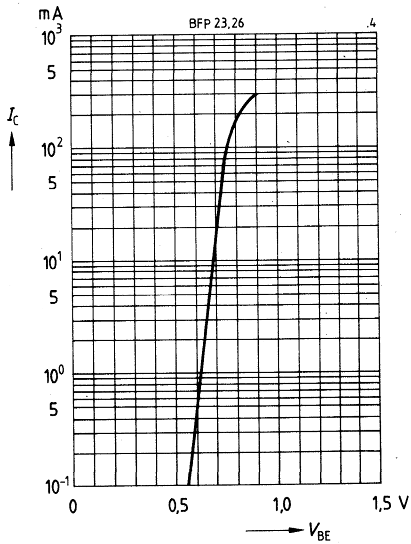
Operating range $I_C = f\,(V_{CE})$
$D = 0$, $T_A = 25\,°C$



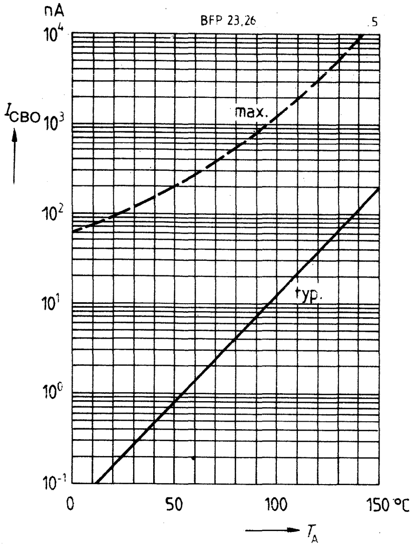
Pulse handling capability $r_{th} = f\,(t_p)$



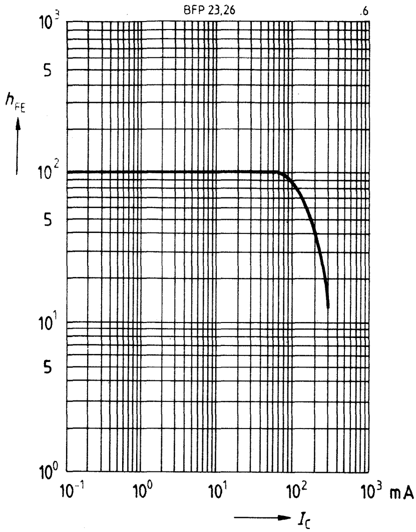
Collector current $I_C = f\,(V_{BE})$
$V_{CE} = 10$ V, $T_A = 25\,°C$



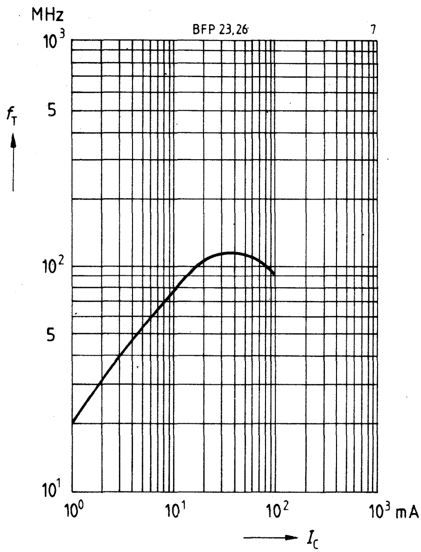
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 160$ V, 250 V



DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 10$ V, $T_A = 25$ °C

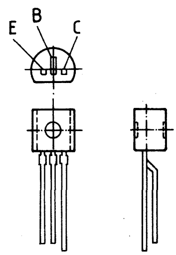


Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 10$ V, $f = 20$ MHz



AF Darlington Transistors

- High current gain
- High collector current
- Complementary type: BC 517 (NPN)



Plastic package, TO-92
Approx. weight 0.25 g

Type	Ordering code
S BC 516	Q62702-C944

Maximum Ratings

Description	Symbol	BC 516	Unit
Collector-emitter voltage	V_{CEO}	30	V
Collector-base voltage	V_{CBO}	40	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	500	mA
Peak collector current	I_{CM}	800	mA
Base current	I_B	100	mA
Peak base current	I_{BM}	200	mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65...+150	°C
Thermal resistance			
junction – ambient	R_{thJA}	≤200	K/W
junction – case	R_{thJC}	≤ 90	K/W

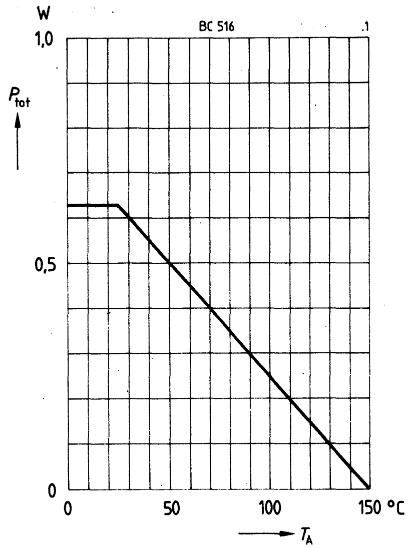
Electrical Characteristics
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$	30	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CBO}$	40	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$	$V_{(BR)EBO}$	10	–	–	V
Collector cutoff current $V_{CB} = 30$ V $V_{CB} = 30$ V, $T_A = 150\,°C$	I_{CBO}	 – –	 – –	 100 10	 nA μA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	μA
DC current gasin $I_C = 20$ mA; $V_{CE} = 2$ V	h_{FE}	30000	–	–	–
Collector-emitter saturation voltage[1]) $I_C = 100$ mA; $I_B = 0{,}1$ mA	V_{CEsat}	–	–	1	V
Base-emitter voltage[1]) $I_C = 10$ mA; $V_{CE} = 5$ V	V_{BE}	–	–	1,4	V

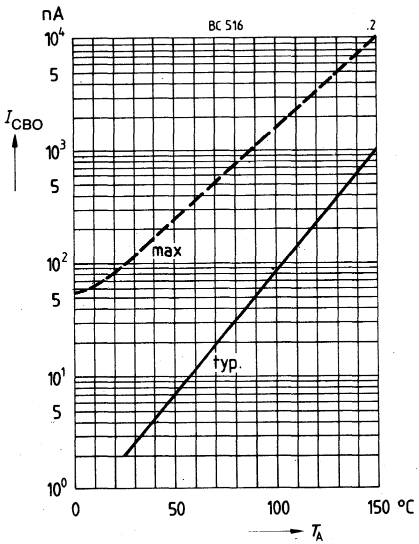
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	200	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3,5	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

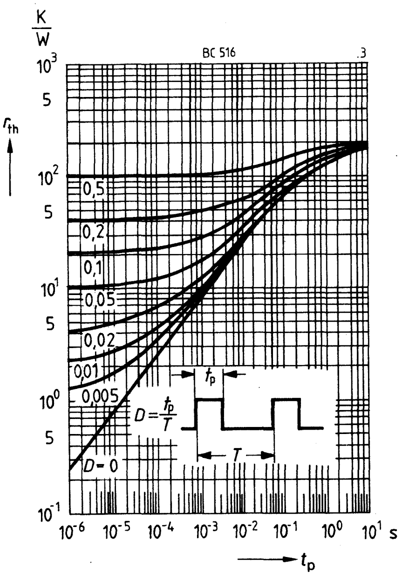
Total power dissipation $P_{tot} = f\ (T_A)$



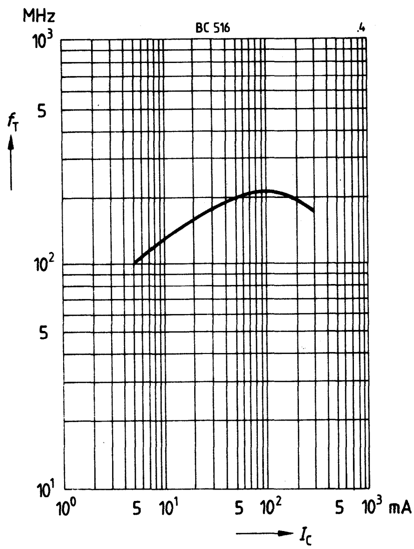
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



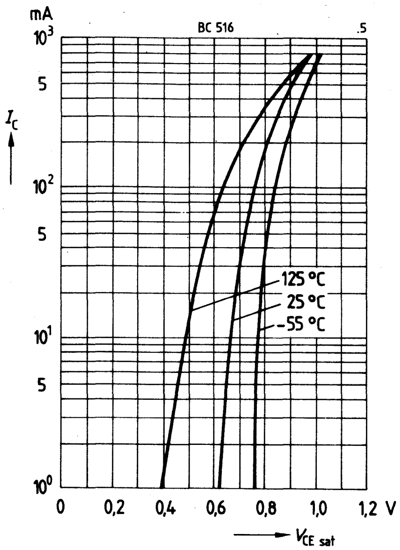
Pulse handling capability $r_{th} = f\ (t_p)$



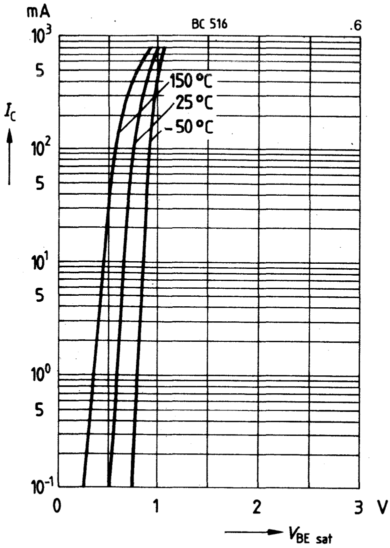
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V



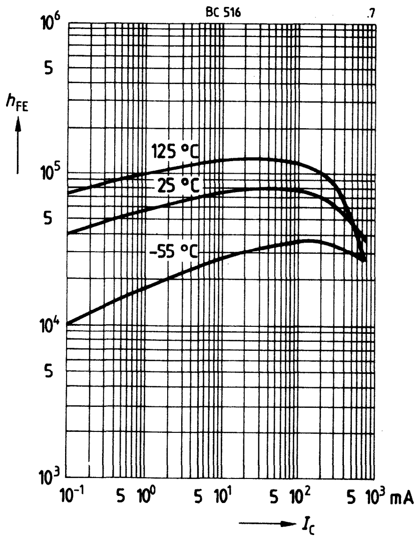
Collector-emitter saturation voltage $V_{CEsat} = f(I_C)$
$h_{FE} = 1000$



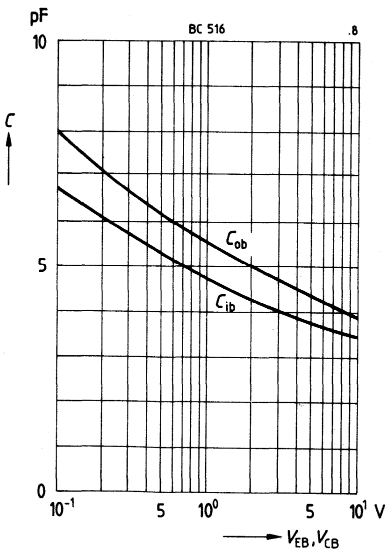
Base-emitter saturation voltage $V_{BEsat} = f(I_C)$
$h_{FE} = 1000$



DC current gain $h_{FE} = f(I_C)$
$V_{CE} = 2$ V



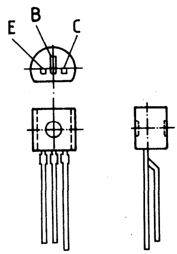
Capacitance $C = f(V_{EB}, V_{CB})$



NPN Silicon Darlington Transistor

BC 517

- High current gain
- High collector current
- Complementary type: BC 516 (PNP)



Plastic package, TO-92
Approx. weight 0.25 g

Type	Ordering code
BC 517	Q62702-C825

Maximum Ratings

Description	Symbol	BC 517	Unit
Collector-emitter voltage	V_{CEO}	30	V
Collector-base voltage	V_{CBO}	40	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	500	mA
Peak collector current	I_{CM}	800	mA
Base current	I_B	100	mA
Peak base current	I_{BM}	200	mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65...+150	°C
Thermal resistance			
junction – ambient	R_{thJA}	≤200	K/W
junction – case	R_{thJC}	≤ 90	K/W

Electrical Characteristics

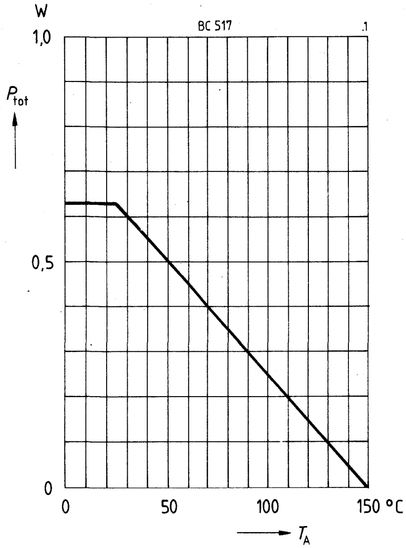
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 10$ mA	$V_{(BR)CEO}$	30	–	–	V
Collector-base breakdown voltage $I = 100$ µA	$V_{(BR)CBO}$	40	–	–	V
Emitter-base breakdown voltage $I_E = 10$ µA	$V_{(BR)EBO}$	10	–	–	V
Collector cutoff current $V_{CB} = 30$ V $V_{CB} = 30$ V, $T_A = 150\,°C$	I_{CB}	 – –	 – –	 100 10	 nA µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain $I_C = 20$ mA; $V_{CE} = 2$ V[1]	h_{FE}	30000	–	–	–
Collector-emitter saturation voltage[1] $I_C = 100$ mA; $I_B = 0{,}1$ mA	V_{CEsat}	–	–	1	V
Base-emitter voltage[1] $I_C = 10$ mA; $V_{CE} = 5$ V	V_{BE}	–	–	1,4	V

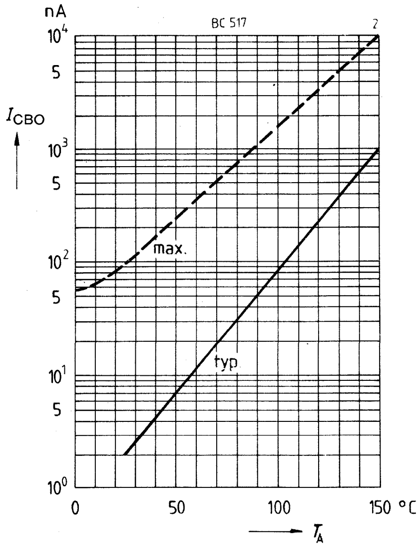
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	150	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3,5	–	pF

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

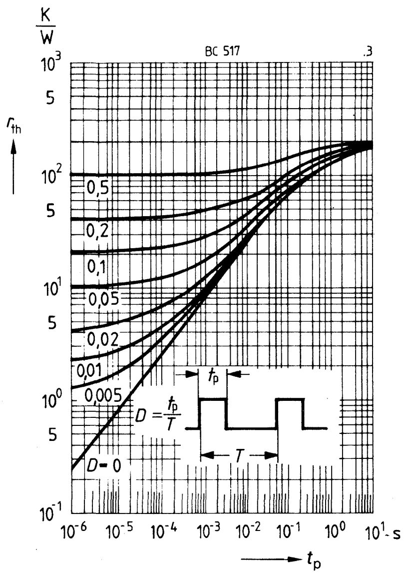
Total power dissipation $P_{tot} = f\ (T_A)$



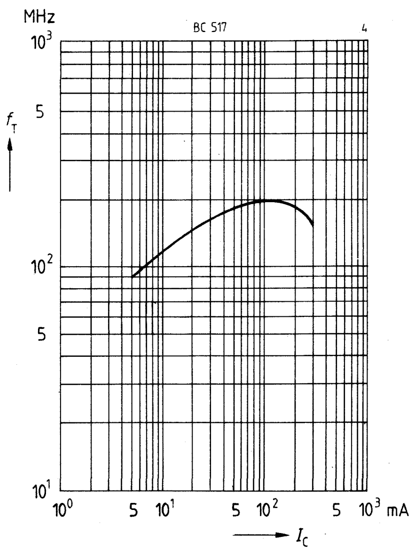
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 30$ V



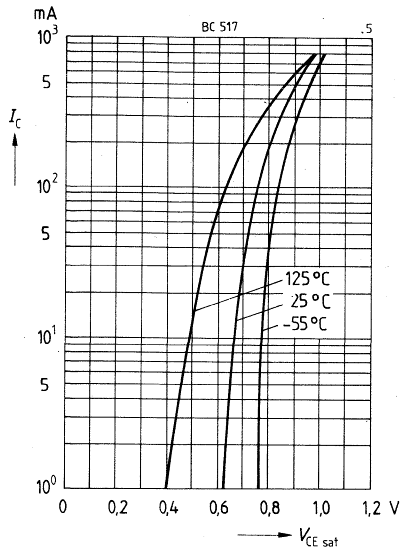
Pulse handling capability $r_{th} = f\ (t_p)$



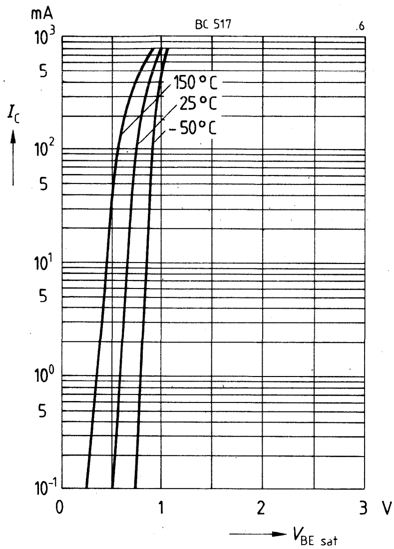
Transition frequency $f_T = f\ (I_C)$
$V_{CE} = 5$ V, $f = 20$ MHz



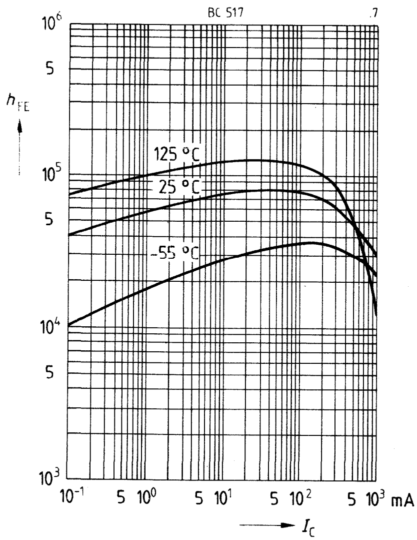
Collector-emitter saturation voltage $V_{CEsat} = f\,(I_C)$
$h_{FE} = 1000$, parameter $= T_A$



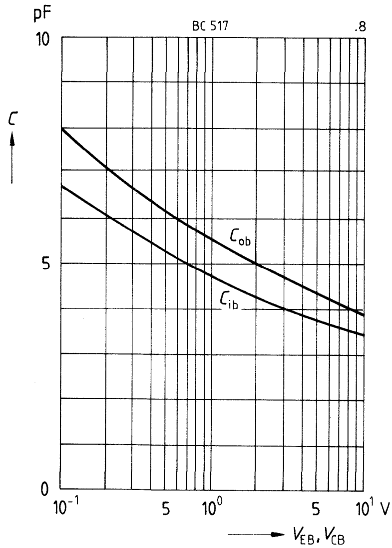
Base-emitter saturation voltage $V_{BEsat} = f\,(I_C)$
$h_{FE} = 1000$, parameter $= T_A$



DC current gain $h_{FE} = f\,(I_C)$
$V_{CE} = 2$ V, parameter $= T_A$



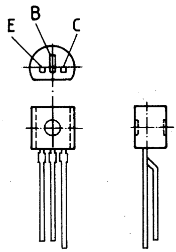
Capacitance $C = f\,(V_{EB}, V_{CB})$



NPN Silicon Darlington Transistors

BC 617
BC 618

- High current gain
- High collector current



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code
BC 617	Q62702-C1137	BC 618	Q62702-C1138

Maximum Ratings

Description	Symbol	BC 617	BC 618	Unit
Collector-emitter voltage	V_{CEO}	40	55	V
Collector-base voltage	V_{CBO}	50	80	V
Emitter-base voltage	V_{EBO}	12		V
Collector current	I_C	500		mA
Peak collector current	I_{CM}	800		mA
Base current	I_B	100		mA
Peak base current	I_{BM}	200		mA
Total power dissipation $T_A = 25\,°C$	P_{tot}	625		mW
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	−65...+150		°C
Thermal resistance				
junction – ambient	R_{thJA}	≤200		K/W
junction – case	R_{thJC}	≤ 90		K/W

Electrical Characteristics

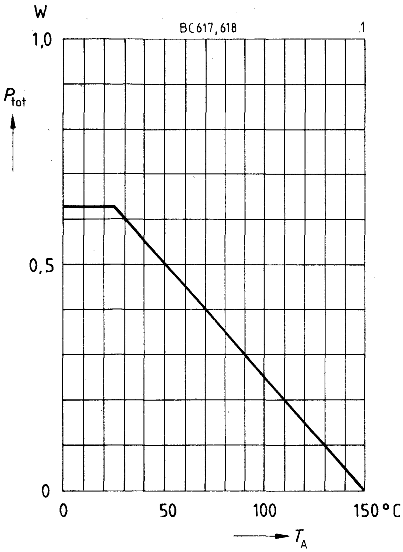
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics		**Symbol**	**min**	**typ**	**max**	**Unit**
Collector-emitter breakdown voltage $I_C = 10$ mA		$V_{(BR)CEO}$				
	BC 617		40	–	–	V
	BC 618		55	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$		$V_{(BR)CBO}$				
	BC 617		50	–	–	V
	BC 618		80	–	–	V
Emitter-base breakdown voltage $I_E = 10\ \mu A$		$V_{(BR)EBO}$	12	–	–	V
Collector cutoff current		I_{CBO}				
$V_{CB} = 40$ V	BC 617		–	–	100	nA
$V_{CB} = 60$ V	BC 618		–	–	100	nA
$V_{CB} = 40$ V, $T_A = 150\,°C$	BC 617				10	µA
$V_{CB} = 60$ V, $T_A = 150\,°C$	BC 618		–	–	10	µA
Emitter cutoff current $V_{EB} = 4$ V		I_{EBO}	–	–	100	nA
DC current gain		h_{FE}				
$I_C = 100\ \mu A$; $V_{CE} = 5$ V	BC 617		4000	–	–	–
	BC 618		2000	–	–	–
$I_C = 10$ mA; $V_{CE} = 5$ V[1]	BC 617		10000	–	–	–
	BC 618		4000	–	–	–
$I_C = 200$ mA; $V_{CE} = 5$ V[1]	BC 617		20000	–	70000	–
	BC 618		10000	–	50000	–
$I_C = 1000$ mA; $V_{CE} = 5$ V[1]	BC 617		10000	–	–	–
	BC 618		4000	–	–	–
Collector-emitter saturation voltage[1] $I_C = 200$ mA; $I_B = 0{,}2$ mA		V_{CEsat}	–	–	1,1	V
Base-emitter saturation voltage[1] $I_C = 200$ mA; $I_B = 0{,}2$ mA		V_{BEsat}	–	–	1,6	V

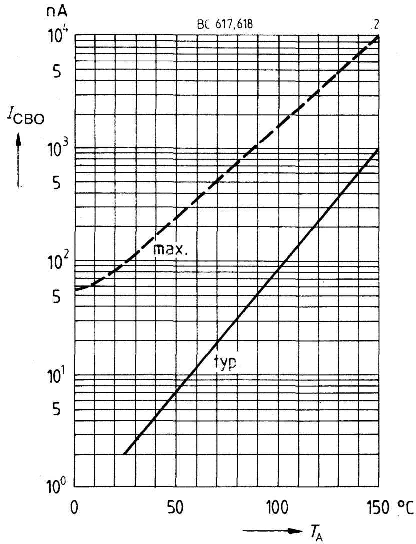
AC Characteristics	**Symbol**	**min**	**typ**	**max**	**Unit**
Transition frequency $I_C = 50$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	150	–	MHz
Output capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{ob}	–	3,5	–	pF

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

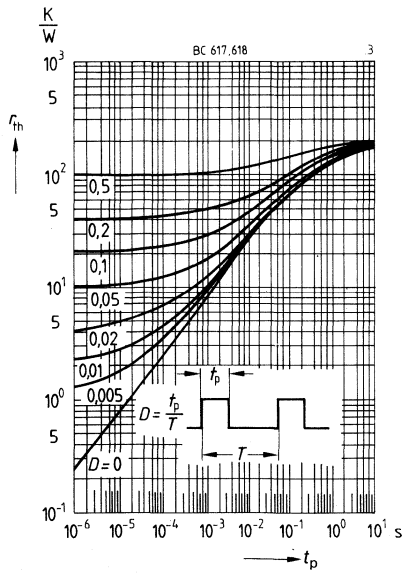
Total power dissipation $P_{tot} = f\,(T_A)$



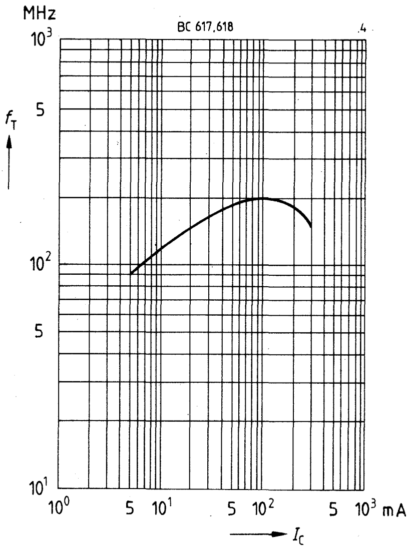
Collector cutoff current $I_{CBO} = f\,(T_A)$
$V_{CB} = 40$ V, 60 V



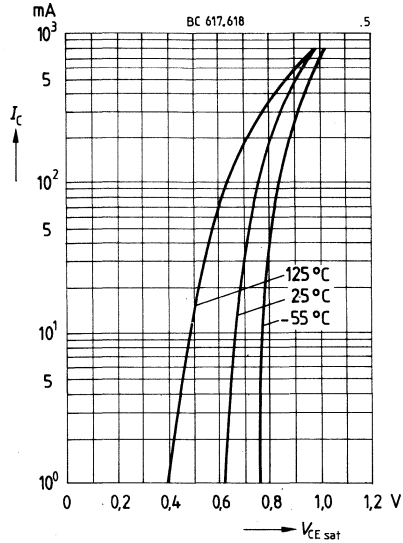
Pulse handling capability $r_{th} = f\,(t_p)$



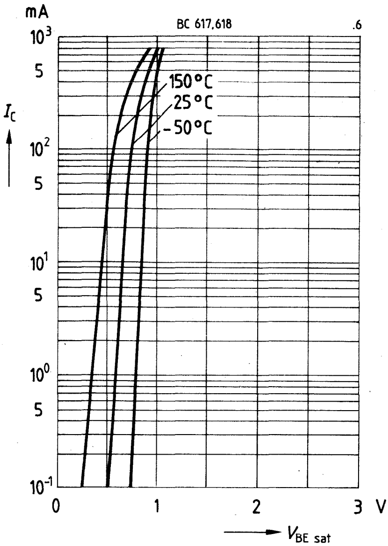
Transition frequency $f_T = f\,(I_C)$
$V_{CE} = 5$ V, $f = 20$ MHz



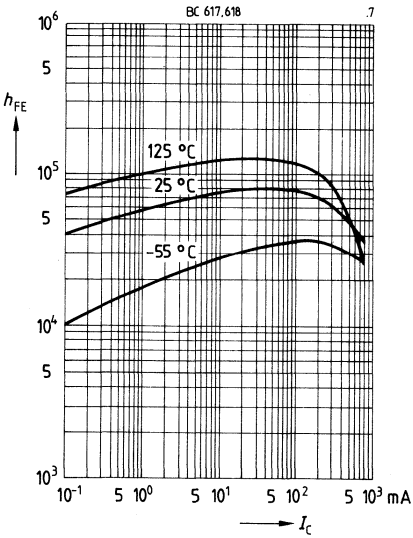
Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
$h_{FE} = 1000$, parameter $= T_A$



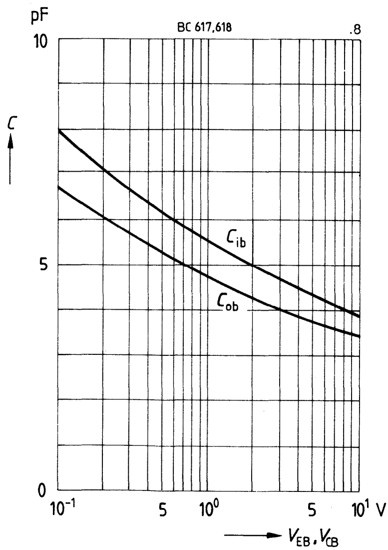
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
$h_{FE} = 1000$, parameter $= T_A$



DC current gain $h_{FE} = f\ (I_C)$



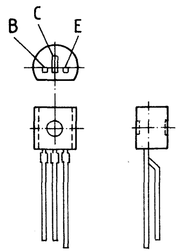
Capacitance $C = f\ (V_{EB}, V_{CB})$



NPN Silicon Darlington Transistors

BC 875 ...BC 879

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 876, BC 878, BC 880 (PNP)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
BC 875	C62702-C853	BC 877	C62702-C854	BC 879	C62702-C855

Maximum Ratings

Description	Symbol	BC 875	BC 877	BC 879	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	60	80	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		2		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_A = 25$ °C[1]	P_{tot}		0,8 (1)		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient[1]	R_{thJA}		≤156		K/W
junction – case	R_{thJC}		≤55		K/W

[1] If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, $R_{thJA} = 125$ K/W and thus $P_{tot\,max} = 1$ W at $T_A = 25$ °C.

Electrical Characteristics

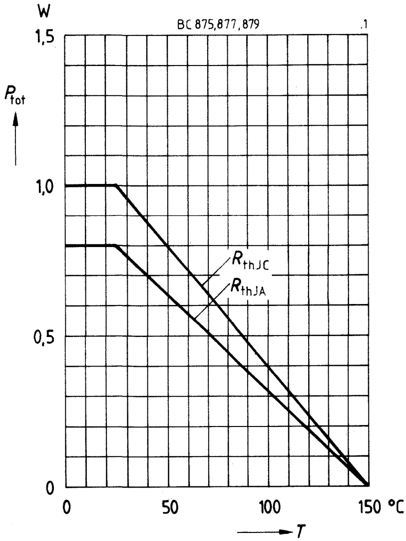
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 50$ mA	$V_{(BR)CEO}$				
BC 875		45	–	–	V
BC 877		60	–	–	V
BC 879		80	–	–	V
Collector-base breakdown voltage $I_C = 100\ \mu A$	$V_{(BR)CBO}$				
BC 875		60	–	–	V
BC 877		80	–	–	V
BC 879		100	–	–	V
Emitter-base breakdown voltage $I_E = 100\ \mu A$	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CE} = 0{,}5$ V, V_{CEmax}	I_{CEO}	–	–	500	nA
Collectur cutoff current	I_{CBO}				
$V_{CB} = V_{CBmax}$		–	–	100	nA
$V_{CB} = V_{CBmax}$, $T_A = 150\,°C$		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C = 150$ mA; $V_{CE} = 10$ V[1]		1 000	–	–	–
$I_C = 500$ mA; $V_{CE} = 10$ V[1]		2 000	–	–	–
Collector-emitter saturation voltage[1]	V_{CEsat}				V
$I_C = 500$ mA; $I_B = 0{,}5$ mA		–	–	1,3	
$I_C = 1$ A, $I_B = 1$ mA		–	–	1,8	
Base-emitter saturation voltage[1] $I_C = 1$ A; $I_B = 1$ mA	V_{BEsat}	–	–	2,2	V

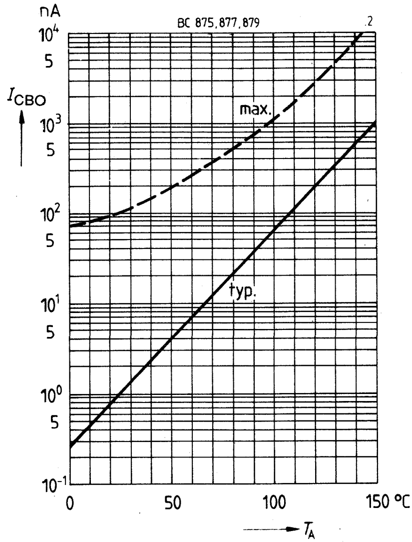
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 200$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	150	–	MHz

[1]) Pulse test: $t \leq 300\ \mu s$, $D \leq 2\%$

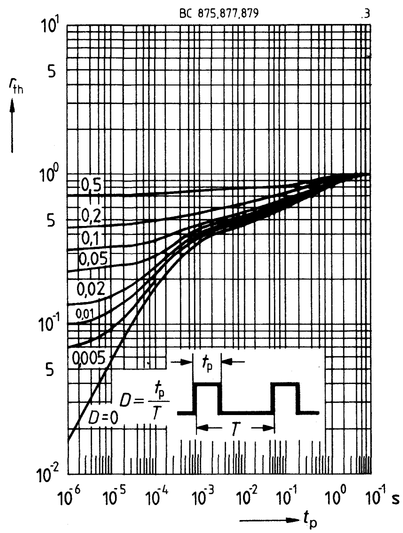
Total power dissipation $P_{tot} = f(T)$



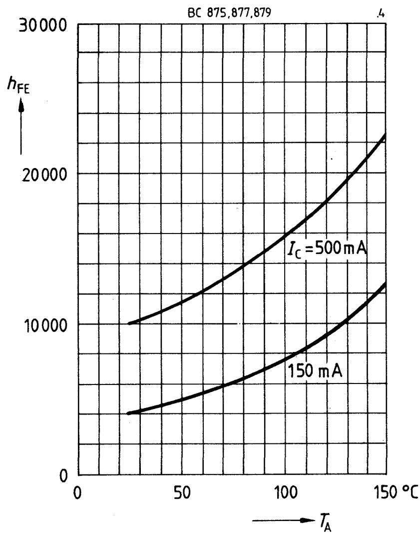
Collector cutoff current $I_{CBO} = f(T_A)$
$V_{CB} = 100$ V



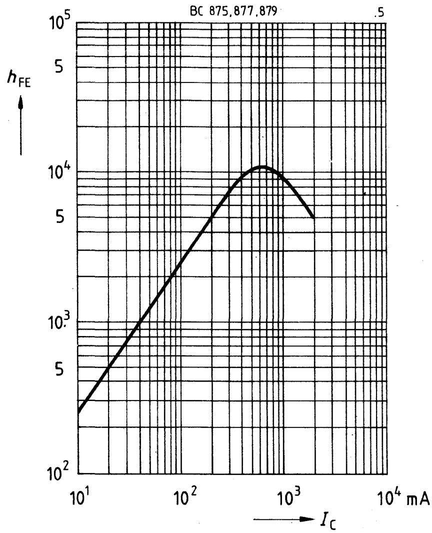
Pulse handling capability $r_{th} = f(t_p)$
(standardized)



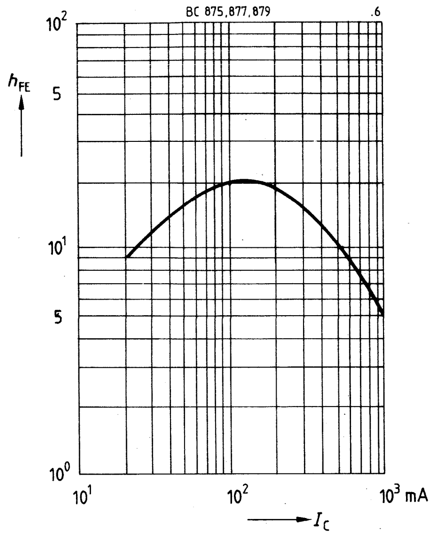
DC current gain $h_{FE} = f(T_A)$
$V_{CE} = 10$ V



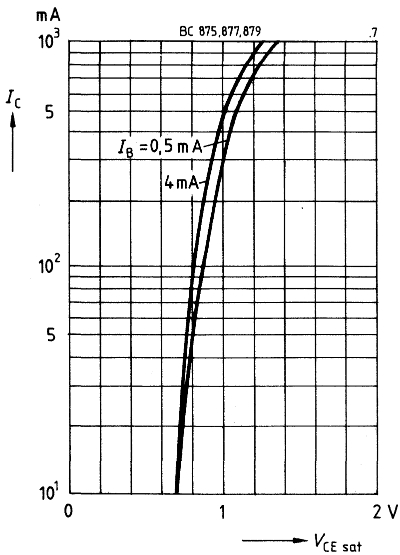
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 10$ V, $T_A = 25$ °C



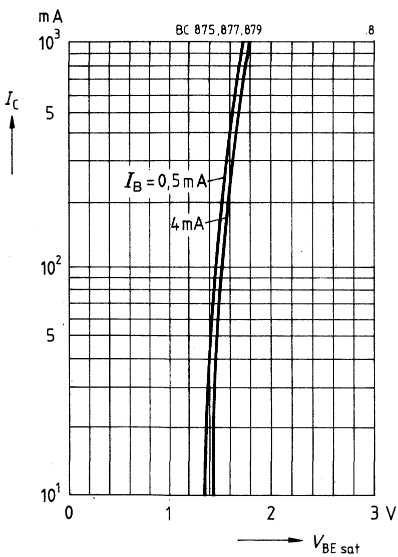
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5$ V, $f = 35$ MHz



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
Parameter $= I_B$, $T_A = 25$ °C



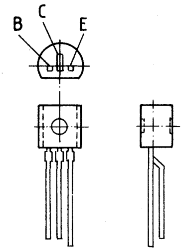
Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
Parameter $= I_B$, $T_A = 25$ °C



PNP Silicon Darlington Transistors

BC 876 ...BC 880

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 875, BC 877, BC 879 (NPN)



Plastic package TO-92
Approx. weight 0.25 g

Type	Ordering code	Type	Ordering code	Type	Ordering code
S BC 876	Q62702-C943	S BC 878	Q62702-C942	S BC 880	Q62702-C941

Maximum Ratings

Description	Symbol	BC 876	BC 878	BC 880	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	60	80	100	V
Emitter-base voltage	V_{EBO}		5		V
Collector current	I_C		1		A
Peak collector current	I_{CM}		2		A
Base current	I_B		100		mA
Peak base current	I_{BM}		200		mA
Total power dissipation $T_A = 25\,°C$ [1]	P_{tot}		0,8 (1)		W
Junction temperature	T_j		150		°C
Storage temperature range	T_{stg}		−65...+150		°C
Thermal resistance					
junction – ambient[1]	R_{thJA}		≤156		K/W
junction – case	R_{thJC}		≤ 55		K/W

[1]) If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm x 10 mm large copper area for the collector terminal, R_{thJA} = 125 K/W and thus $P_{tot\,max}$ = 1 W at T_A = 25 °C.

Electrical Characteristics

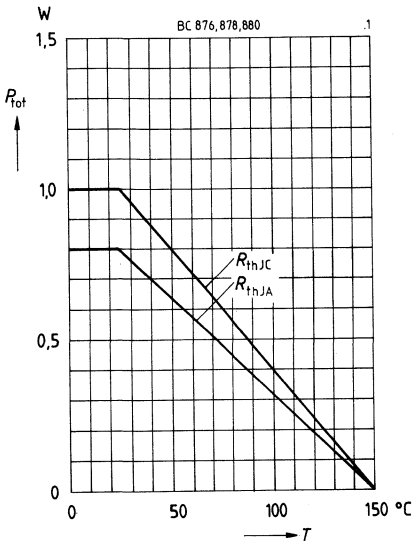
at $T_A = 25\,°C$, unless otherwise specified

DC Characteristics	Symbol	min	typ	max	Unit
Collector-emitter breakdown voltage $I_C = 50$ mA	$V_{(BR)CE}$				
BC 876		45	–	–	V
BC 878		60	–	–	V
BC 880		80	–	–	V
Collector-base breakdown voltage $I_C = 100$ µA	$V_{(BR)CBO}$				
BC 876		60	–	–	V
BC 878		80	–	–	V
BC 880		100	–	–	V
Emitter-base breakdown voltage $I_E = 100$ µA	$V_{(BR)EBO}$	5	–	–	V
Collector cutoff current $V_{CE} = 0{,}5$ V, V_{CEmax}	I_{CEO}	–	–	500	V
Collector cutoff current	I_{CBO}				
$V_{CB} = V_{CBmax}$		–	–	100	nA
$V_{CB} = V_{CBmax}$; $T_A = 150\,°C$		–	–	20	µA
Emitter cutoff current $V_{EB} = 4$ V	I_{EBO}	–	–	100	nA
DC current gain	h_{FE}				
$I_C = 150$ mA; $V_{CE} = 10$ V[1]		1000	–	–	–
$I_C = 500$ mA; $V_{CE} = 10$ V[1]		2000	–	–	–
Collector-emitter saturation voltage[1]	V_{CEsat}				V
$I_C = 500$ mA; $I_B = 0{,}5$ mA		–	–	1,3	
$I_C = 1000$ mA; $I_B = 1$ mA		–	–	1,8	
Base-emitter saturation voltage[1] $I_C = 1000$ mA; $I_B = 1$ mA	V_{BEsat}	–	–	2,2	V

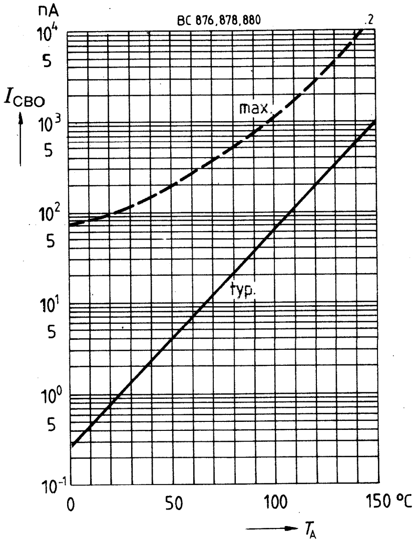
AC Characteristics	Symbol	min	typ	max	Unit
Transition frequency $I_C = 200$ mA, $V_{CE} = 5$ V, $f = 20$ MHz	f_T	–	150	–	MHz

[1]) Pulse test: $t \leq 300$ µs, $D \leq 2\%$

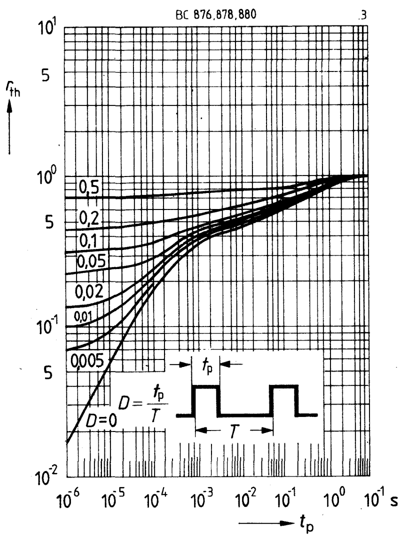
Total power dissipation $P_{tot} = f\ (T)$



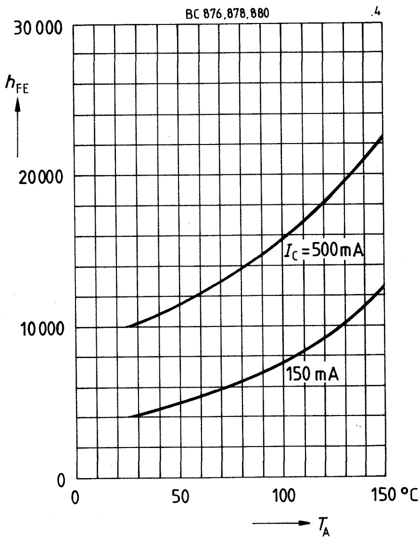
Collector cutoff current $I_{CBO} = f\ (T_A)$
$V_{CB} = 100$ V



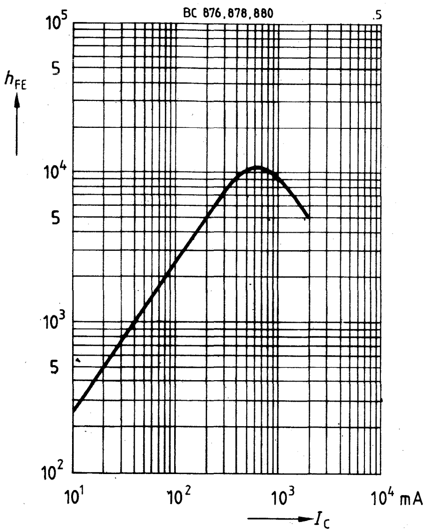
Pulse handling capability $r_{th} = f\ (t_p)$
(standardized)



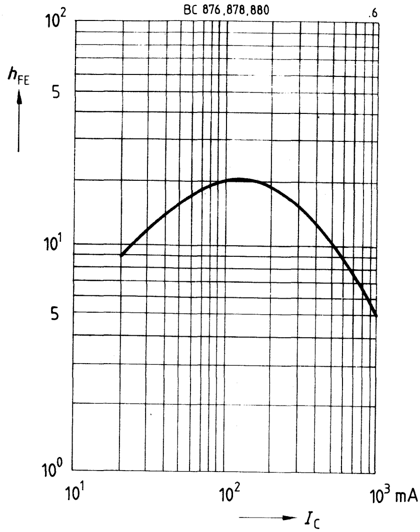
DC current gain $h_{FE} = f\ (T_A)$
$V_{CE} = 10$ V



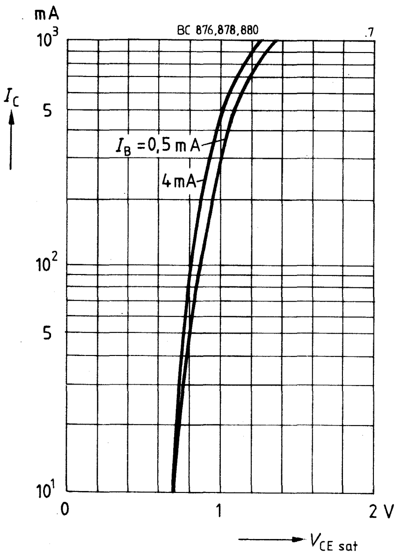
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 10\ V$, $T_A = 25\ °C$



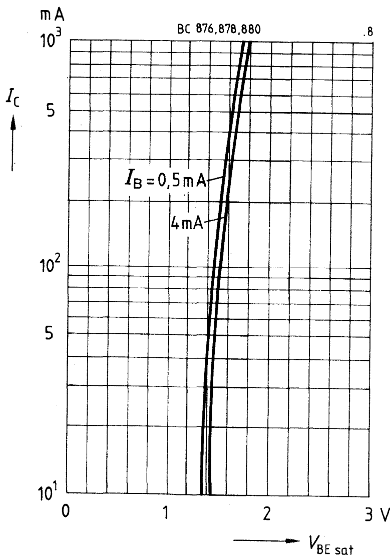
DC current gain $h_{FE} = f\ (I_C)$
$V_{CE} = 5\ V$, $f = 35\ MHz$



Collector-emitter saturation voltage $V_{CEsat} = f\ (I_C)$
Parameter $= I_B$, $T_A = 25\ °C$



Base-emitter saturation voltage $V_{BEsat} = f\ (I_C)$
Parameter $= I_B$, $T_A = 25\ °C$



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Erläuterung der verwendeten Kennzeichen

1

● ausfuhrgenehmigungspflichtig

❍ US-reexportgenehmigungspflichtig

⊙ ausfuhr- und reexportgenehmigungspflichtig, d. h. Bauelemente, bei deren Bestellungen die Embargo-/Reexportvorschriften einzuhalten sind

▼ neu in diese Liste aufgenommene Bauelemente

■ nicht für Neuentwicklung bestimmte Bauelemente

* variable Ziffer

® eingetragenes Warenzeichen

Gütebestätigung nach CECC 50 000

SMD (**S**urface **M**ounted **D**evices) grau gerasterte Typenbezeichnungen kennzeichnen SMD-Gehäuse-Bauformen (oberflächenmontierbare Bauelemente)

Alle in den **Gehäusebauformen** angegebenen Maße verstehen sich in **mm**, sofern nicht anders angegeben.

Explanation of Symbols

● components subject to export licensing (COCOM EMBARGO)

❍ components subject to US-reexport licensing

⊙ components subject to export (COCOM EMBARGO) and US-reexport licensing

▼ new included components

■ components not for new design

* variable digit

® registered trademark

CECC 50 000

SMD (**S**urface **M**ounted **D**evices) type designations marked in grey refer to SMDs

All dimensions in **package outlines** are in **mm**, if not otherwise specified.

2

Integrierte Schaltungen

Integrated Circuits

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
TV-Tuner-ICs TV-Tuner-ICs						
▼ TUA 2007X	VHF/UHF-Mixer/Oscillator, kompatibel mit TDA 5330T compatible with TDA 5330T	P-DSO-28	Q67000-A8195	25		
▼ TUA 2009X	VHF/UHF-Mixer/Oscillator mit integriertem 1. ZF Filter with integrated 1st IF filter	P-DSO-24	Q67000-A5113	30		
▼ TUA 2017X	VHF/UHF-Mixer/Oscillator kompatibel mit TDA 5331T (TUA 2007X gespiegelt) compatible with TDA 5331T (TUA 2007X mirror)	P-DSO-28	Q67000-A8239	25		
▼ TUA 2019X	VHF/UHF-Mixer/Oscillator mit integriertem 1. ZF Filter with integrated 1st IF filter (TUA 2009 gespiegelt) (TUA 2009 mirror)	P-DSO-24	Q67000-A5079	30		
Bild-ZF-ICs Video IF ICs						
TDA 5930WS	Multistandard-Video-ZF / Multistandard Video IF	P-DIP-16	Q67000-A8169	25		
▼ TDA 6050	Video-ZF / Video IF	P-DIP-20	Q67000-A5084	20		
▼ TDA 6050X	Video-ZF / Video IF	P-DSO-20	Q67000-A5062	39		
▼ TDA 6051	Video-ZF / Video IF	P-DIP-20	Q67000-A5116	20		
▼ TDA 6051X	Video-ZF / Video IF	P-DSO-20	Q67000-A5081	39		
TV-Ton-ZF-Verstärker TV-Sound IF Amplifiers						
▼ TBA 121-2	FM-ZF / FM IF	P-DIP-16	Q67000-A5045	25		
TBA 229-2	Doppel-FM-ZF / Dual FM IF	P-DIP-16	Q67000-A8037	25		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Stereo-Ton-IC Stereo Sound IC						
TDA 6200	Stereo-Klangregler Stereo Sound	P-DIP-28	Q67000-A2461	14		
TDA 6600-2	TV Stereo Dekoder und Matrix TV Stereo Decoder with Matrix	P-DIP-24	Q67000-A8210	15		
TDA 6610-2	TV-Stereo-Prozessor TV Stereo Processor	P-DIP-28	Q67000-A5026	14		
TDA 6611	TV-Stereo-Prozessor TV Stereo Processor	P-DIP-24	Q67000-A8260	14		
▼ TDA 6612-2	1-Chip-Stereo-Prozessor 1-Chip Stereo Processor	P-DIP-28	Q67000-A5097	10		
▼ TDA 6812-2	1-Chip-Stereo-Prozessor, SCART-Anschl. 1-Chip Stereo Processor, SCART-Connection	P-DIP-40	Q67000-A5076	10		
NF-Leistungsverstärker AF Power Amplifiers						
▼ TDA 1138	5W-NF-Verstärker mit Ton-Mute 5W AF Amplifier with Tone Mute	P-DIP-18-1	Q67000-A5109	20		
Schaltnetzteil ICs Switch-Mode Power Supply ICs						
TDA 4601	Steuer-IC für SNTs (Bip. Trans.) Control IC for SMPS (Bip. Trans.)	P-SIP-9	Q67000-A2379	20		
▼ TDA 4605	Steuer-IC für SNTs (für SIPMOS-Trans.) Control IC for SMPS (SIPMOS-Trans.)	P-DIP-8	Q67000-A8078	50		
TDA 4605-2	Steuer-IC für SNTs (für SIPMOS-Trans.) Control IC for SMPS (SIPMOS-Trans.)	P-DIP-8	Q67000-A5020	50		
▼ TDA 4605-3	Steuer-IC für SNTs (für SIPMOS-Trans.) Control IC for SMPS (SIPMOS-Trans.)	P-DIP-8	Q67000-A5066	50		

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Videotext ICs und VPT System Teletext ICs and VPT System						
SDA 5231-2	Data-Slicer für VTX-Prozessor Data Slicer for TTX Processor	P-DIP-28	Q67000-A5006	28		
SDA 5243-2	Videotext-Prozessor Teletext Processor	P-DIP-40	Q67100-H5031	10		
▼ SDA 5243TR	VTX-Prozessor (türk. character set) TTX Processor (turkish character set)	P-DIP-40	Q67100-H5042	10		
▼ SDA 5248-2C1	Multipage-VTX-Prozessor (Westeuropa) Multipage TTX Processor (West Europe character set)	P-DIP-40	Q67100-H5117	10		
▼ SDA 5248-2C2	Multipage-VTX-Prozessor (Osteuropa) Multipage TTX Processor (East Europe character set)	P-DIP-40	Q67100-H5121	10		
VCR – VPS IC						
SDA 5642	Ein-Chip-VPS-Decoder Single-Chip VPS Decoder	P-DIP-14	Q67100-H8547	25		
▼ SDA 5642X	Ein-Chip-VPS-Decoder Single-Chip VPS Decoder	P-DSO-14	Q67100-H8637	39		

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Bild-im-Bild Picture-in-Picture						
SDA 9086-3	PLL für BIB System PLL for PIP System	P-DIP-8	Q67100-H5045	50		
SDA 9087-2	A/D-Schnittstelle für eingeblendetes Bild A/D Interface for Inserted Picture	P-DIP-28	Q67100-H5066	14		
SDA 9088-2	Bildeinblendungs-prozessor Picture Insertion Processor	P-DIP-28	Q67100-H5043	14		
Microcontroller						
▼ SDA 30161	µC, 768 Byte RAM	P-LCC-68	Q67120-C463	18		
▼ SDA 30C162	CMOS µC	P-LCC-68	Q67120-D6230	18		
PLL						
▼ SDA 3302-2	1,3 GHz-PLL	P-DIP-18	Q67000-A5095	20		
▼ SDA 3302-2X	1,3 GHz-PLL	P-DSO-20	Q67000-A5094	40		
▼ SDA 3302-2X6	1,3 GHz-PLL	P-DSO-16	Q67000-A5090	50		
▼ SDA 3412	PLL, kompatibel mit TSA 5512 PLL, compatible with TSA 5512	P-DIP-18	Q67000-H5060	20		
▼ SDA 3412X	PLL, kompatibel mit TSA 5512AT PLL, compatible with TSA 5512AT	P-DSO-20	Q67000-H5056	39		
▼ SDA 3412X6	PLL, kompatibel mit TSA 5512T PLL, compatible with TSA 5512T	P-DSO-16	Q67000-H5055	50		
Nichtflüchtige Speicher (EEPROM) Non-Volatile Memories (EEPROM)						
SDA 2506-3	1-Kbit, 3-Line Bus	P-DIP-8	Q67100-H5059	50		
SDA 2516-2	1-Kbit, I²C-Bus Interface	P-DIP-8	Q67100-H5002	50		
SDA 2526-2	2-Kbit, I²C-Bus Interface	P-DIP-8	Q67100-H5001	50		
SDA 2546	4-Kbit, I²C-Bus Interface	P-DIP-8	Q67100-H8616	50		
SDA 2586	8-Kbit, I²C-Bus Interface	P-DIP-8	Q67100-H8617	50		
▼ SDA 3526-2	2-Kbit, I²C-Bus, Schreibschutz / Overwrite Protection	P-DIP-8	Q67100-H5012	50		
▼ SDA 3546	4-Kbit, I²C-Bus, Schreibschutz / Overwrite Protection	P-DIP-8	Q67100-H5058	50		
▼ SDA 3586	8-Kbit, I²C-Bus, Schreibschutz / Overwrite Protection	P-DIP-8	Q67100-H5061	50		

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Analog-Digital Converter – ADC **Analog-Digital Converter – ADC**						
SDA 9205-2	3-fach 8-Bit ADC Triple 8-Bit ADC	P-LCC-68	Q67100-H5069	5		
Video-Speicher (VRAM) **Video Memory**						
SDA 9251 X	868352-Bit Dynamic Sequential Access Memory for Television Applications (TV-SAM)	P-DSO-28-3	Q67100-H5073	5		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
SAT TV-ICs						
			Q67000-			
▼ SDA 6102-5X	PLL & Vorteiler, 2,4 GHz PLL & Prescaler 2,4 GHz	P-DSO-16	-H5129	50		
▼ TDA 6130-5	2,4 GHz-Mischer 2,4 GHz Mixer	P-DIP-14	-A5171	25		
▼ TDA 6130-5X4	2,4 GHz-Mischer 2,4 GHz Mixer	P-DSO-14	-A5176	50		
▼ TDA 6140-5X	Begrenzer-Demodulator Limiter Demodulator	P-DSO-16	-A5172	50		
▼ TDA 6142-5X	Begrenzer-Demodulator / umschaltb. Eingang Limiter Demodulator / Switch over Input	P-DSO-20	-A5173	40		
▼ TDA 6149X	Begrenzer-Demodulator mit analoger AFC Limiter Demodulator with analog AFC	P-DSO-16	-A5048	50		
▼ TDA 6151	Videoprozessor für SAT/TV Videoprocessor for SAT/TV	P-DIP-20	-A5075	20		
▼ TDA 6151X	Videoprozessor für SAT/TV Videprocessor for SAT/TV	P-DSO-20	-A5074	40		
▼ TDA 6160-2X	Audioprozessor für SAT/TV Audioprocessor for SAT/TV	P-DSO-28	-A5085	25		
Modulatoren Modulators						
			Q67000-			
▼ TDA 5666	FM/AM-Modulator	P-DIP-18	-A5103	20		
▼ TDA 5666X	FM/AM-Modulator	P-DSO-20	-A5114	40		
▼ TDA 5670X-5X	FM/AM-Modulator mit PLL-Ausgang FM/AM Modulator with PLL Output	P-DSO-20	-A5167	40		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Autoradio FM-ZF **Car Radio IC FM-IF**						
▼ SDA 2121-2	CMOS-PLL, 150 MHz, I^2C-Bus	P-DIP-20	Q67100- -H5025	20		
▼ SDA 2121-2X	CMOS-PLL, 150 MHz, I^2C-Bus	P-DSO-20	-H5026	39		
▼ SDA 2231	2-Farb-LED-Treiber Two-Color-LED Driver	P-DIP-18	Q67000- -A5031	20		
TDA 4210-3	FM-ZF / FM-IF	P-DIP-18	-A8008	20		
▼ TDA 4390	Dig. Audio Prozessor Dig. Audio Processor	P-DIP-28	-A8257	14		
▼ TDA 4390X	Dig. Audio Prozessor Dig. Audio Processor	P-DSO-28	-A5007	25		
▼ TUA 1574	UKW-Tuner-IC	P-DIP-18	-A8101	20		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Anmerkung: Im Laufe des Kalenderjahres 1993 werden die meisten oben aufgeführten Typen von Mch B nach Villach, bzw. Perlach verlagert (Waferproduktion).
Diese Typen erhalten dann zur Kennzeichnung den Affix-5 angehängt.
Die oben genannten Preise ändern sich dadurch nicht.
Bitte beachten Sie zu dieser Verlagerung die einschlägigen HL-Informationen.

Note: In course of 1993, fabrication of most of the types listed above will be shifted from Mch B to Villach or Perlach (wafer production).
To identity them accordingly, they will be given the affix-5.
The prices stated above are not affected by this.
Watch "HL information for details of the production shifts

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 2499
Hall ICs							
			Q67000-				
▼ HKZ 101	Hall-Magnetgabel- Schranke Hall efect vane switch	P-HKZ-3-1	A9002	150			
HKZ 121	Hall-Magnetgabel- schranke Hall-effect vane switch	P-HKZ-3-1	-A9097	150			
● TLE 4901 F	bipolar	P-SSO-3-1	-A2518	100			
● TLE 4902 F	bipolar	P-SSO-3-1	-A8048	100			
● TLE 4903 F	unipolar	P-SSO-3-1	-A8047	100			
■ TLE 4920 G	Differenz-Hall-Sensor Differential-Hall-Sensor	P-DSO-8-1	-A9000	100			
▼ TLE 4921-2 G	Differenz-/differential Hall IC	P-DSO-8-1	-A9141	100			
ICs für Motorsteuerung ICs for Motor Control							
			Q67000-				
● TLE 4202 B	2A-Brücke/bridge	P-TO220-7-1	-A8225	50			
● TLE 4203	4A-Brücke/bridge	P-TO220-7-1	-A8121	50			
● TLE 4203 S	4A-Brücke/bridge	P-TO220-7-2	-A9101	50			
● TLE 4205	0.6A-Brücke/bridge	P-DIP-18-3	-A9025	60			
▼ TLE 4205 G	1A-Brücke/bridge	P-DSO-20-6	-A9114	78			
▼ TLE 5203	3A-Brücke/bridge	P-TO220-7-1	-A9096	500			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 2499
N-Leistungsschalter N-Power Switches							
			Q67000-				
● TLE 4211	2 × 2A Schalter/switch	P-TO220-7-1	-A8118	50			
● TLE 4214	2 × 0,5A Schalter/switch	P-DIP-8-1	-A8183	50			
●▼ TLE 4214 G	2 × 0,5A Schalter/switch	P-DSO-20-7	-A9094	80			
● TLE 4216	2 × 0,5A + 4 × 50mA Schalter/switch	P-DIP-20-3	-A8237	60			
●▼ TLE 4216 G	2 × 0,5A + 4 × 50mA Schalter/switch	P-DSO-24-3	-A9108	60			
● TLE 4220	4A Schalter/switch Schalter/switch	P-TO220-7-1	-A9010	50			
●▼ TLE 5224 G	2 × 4A Schalter/switch	P-DSO-24-3	-A9116	10			
P-Leistungsschalter High-Side-Power Switches							
● TLE 4215	2 × 0,5A Schalter/switch	P-DIP-16-2	Q67000- -A8184	100			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 2499
5-V Low-Drop-Spannungsregler mit Reset **5-V Low-Drop Voltage Regulators with Reset**							
			Q67000				
● TLE 4258	Standby	P-TO220-7-1	-A8238	500			
● TLE 4260	Reset	P-TO220-5-1	-A8187	100			
● TLE 4260 S	Reset	P-TO220-5-2	-A9044	100			
◗▼ TLE 4260-2	Reset, 2%-Genauigkeit accuracy 2%	P-TO220-5-1	-A9128	600			
● TLE 4261	Watchdog, inhibit	P-TO220-7-1	-A9003	100			
● TLE 4261 G	Watchdog, inhibit	P-DSO-20-6	-A9059	117			
◗▼ TLE 4261 S	Watchdog, inhibit	P-TO220-7-2	-A9109	100			
◗▼ TLE 4261-2	Watchdog, inhibit, 2%-Genauigkeit accuracy 2%	P-TO220-7-1	-A9110	600			
◗▼ TLE 4261-2 G	Watchdog, inhibit, 2%-Genauigkeit accuracy 2%	P-DSO-20-6	-A9140	507			
● TLE 4262 G	Watchdog, inhibit	P-DSO-20-6	-A9068	117			
● TLE 4263 G	Watchdog, inhibit	P-DSO-20-6	-A9095	117			
Statische RAMs **Static RAMs**							
			Q67100				
SAE 81C52 G	CMOS, 256 × 8-Bit	P-DSO-20-1	-H9015	10			
SAE 81C52 P	CMOS, 256 × 8-Bit	P-DIP-16-1	-H9017	10			
SAE 81C54 P	CMOS, 512 × 8-Bit	P-DIP-16-1	-H8486	25			
● SAE 81C80 A	Dual-Port RAM	P-LCC-44	-H8706	25			

▒ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Temperaturbereich Temperature range	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Einfach-Operationsverstärker (NPN-Eingang, offener Kollektor, 70 mA, ± 18 V) Single-Operational Amplifiers (NPN Input, Open Collector, 70 mA, ± 18 V)								
			Q67000-					
● TAA 762 A	– 55 … 125 °C	P-DIP-6-1	-A2271	50				
TAA 765 A	– 25 … 85 °C	P-DIP-6-1	-A524	100				
TAA 765 G	– 25 … 85 °C	P-DSO-6-1	-A599	200				
Einfach-Operationsverstärker (PNP-Eingang, offener Kollektor, 100 mA, ± 18 V) Single-Operational Amplifiers (PNP Input, Open Collector, 100 mA, ± 18 V)								
			Q67000-					
TAE 1453 A	– 25 … 85 °C	P-DIP-6-1	-A2017	100				
TAE 1453 G	– 25 … 85 °C	P-DSO-6-1	-A2106	200				
● TAF 1453 A	– 55 … 125 °C	P-DIP-6-1	-A2269	100				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Temperaturbereich Temperature range	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Zweifach-Operationsverstärker (PNP-Eingänge, Offener Kollektor, 100 mA, ± 18 V) **Dual-Operational Amplifiers (PNP Inputs, Open Collector, 100 mA, ± 18 V)**								
			Q67000-					
TAE 2453 A	– 25 … 85 °C	P-DIP-8-1	-A2107	50				
TAE 2453 G	– 25 … 85 °C	P-DSO-8-1	-A2108	200				
● TAF 2453 A	– 55 … 125 °C	P-DIP-8-1	-A2210	50				
Zweifach-Operationsverstärker (Darlington-Eingang) **Dual-Operational Amplifiers (Darlington Input)**								
			Q67000-					
● TBC 2332 B	– 55 … 125 °C	P-DIP-8-1	-A2500	50				
TBE 2335 B	– 25 … 85 °C	P-DIP-8-1	-A1165	50				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Temperaturbereich Temperature range	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Vierfach-Operationsverstärker (PNP-Eingang, Offener Kollektor, 100 mA, ± 18 V) **Quad-Operational Amplifiers (PNP Input, Open Collector, 100 mA, ± 18 V)**								
			Q67000-					
TAE 4453 A	– 25 ... 85 °C	P-DIP-14-1	-A2109	50				
TAE 4453 G	– 25 ... 85 °C	P-DSO-14-1	-A2152	50				
● TAF 4453 A	– 55 ... 125 °C	P-DIP-14-1	-A2212	50				

░ = SMD (Surface Mounted Device)

Gehäuse siehe Kapitel »Gehäusebauformen für ICs«

For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function Temperaturbereich Temperature range	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Leistungsoperationsverstärker / Leistungstreiber Power Operational Amplifiers / Power Drivers								
			Q67000-					
FZL 4145 D	Vierfachtreiber für Leistungsendstufen Quadruple driver for power stages	P-DIP-18-1	-H8437	20				
FZL 4146 G	Vierfachtreiber für Leistungsendstufen Quadruple driver for power stages	P-DSO-20-7	-H8743	40				
TCA 2465	2 × 2.5A/42V	P-SIP-9-1	-A8109	20				
TCA 2465 A	2 × 2.5A/42V	P-DIP-16-2	-A8110	5				
▼ TCA 2465 G	2 × 2A/42 V	P-DSO-20-6	-A8334	20				
Schwellenwertschalter Threshold Switches								
			Q67000-					
TCA 105	– 25 ... 85 °C	P-DIP-6-1	-A527	50				
TCA 105 G	– 25 ... 85 °C	P-DSO-6-1	-A988	100				
Fensterdiskriminator Window Discriminator								
			Q67000-					
▼ TCA 965 B[1)]	– 25 ... 85 °C	P-DIP-14-1	-A8338	25				
▼ TCA 965 BG[2)]	– 25 ... 85 °C	P-DSO-14-1	-A8337	25				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

1) Ersatz für TCA 965 und TCA 965A
Replacement for TCA 965 and TCA 965A
2) Ersatz für TCA 965G
Replacement for TCA 965G

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Schaltnetzteil ICs **Switched-Mode Power Supply ICs**								
			Q67000-					
▼ TDA 4700	Steuer IC für	C-DIP-24-1	-Y595	15				
TDA 4700 A	bipolare Leistungs-	P-DIP-24-1	-Y594	15				
TDA 4714 C	stufen	P-DIP-14-1	-A8312	25				
TDA 4716 C	Control IC for	P-DIP-16-1	-A8313	25				
TDA 4718	bipolar power	C-DIP-18-1	-Y638	20				
TDA 4718 A	stages	P-DIP-18-1	-Y639	20				
TDA 4814 A	Power Factor	P-DIP-14-1	-A8163	25				
▼ TDA 4815	Controller	P-DIP-20-1	-A8323	100				
▼ TDA 4815 G		P-DSO-20-1	-A8324	40				
TDA 4816 G		P-DSO-16-1	-A8290	100				
TDA 4817		P-DIP-8-1	-A8298	50				
TDA 4817 G		P-DSO-8-1	-A8299	100				
▼ TDA 4818		P-DIP-20-1	-A8325	100				
▼ TDA 4819		P-DIP-16-1	-A8326	150				
TDA 4918 A	SNT-IC mit	P-DIP-20-1	-A8021	20				
TDA 4918 G	integriertem	P-DSO-20-1	-A8142	40				
TDA 4919 A	SIPMOS-Treiber	P-DIP-20-1	-A8143	20				
TDA 4919 G	SMPS-IC with SIPMOS Driver Output	P-DSO-20-1	-A8018	40				

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

2

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Phasenanschnittsteuerungen **Phase Control ICs**								
TCA 785	Phasenanschnitt IC für Thyristoren und Triacs Phase control IC for Thyristors and Triacs	P-DIP-16-1	Q67000- -A2321	25				
A/D Umsetzer **A/D Converters**								
▼● SDA 1810 A[1]	10-bit, 8-Kanal-Mux 8-channel mux	P-DIP-28-1	Q67000- -A8332	14				
SDA 0812 A	12-bit, selbstkal. 4-Kanal-Mux 12-bit, selfcal. 4-channel mux	P-DIP-28-1	Q67100- -A8233	14				
SDA 1812 D	12-bit/100 kHz, 4-Kanal-Mux 4-channel mux	P-DIP-28-1	-A8291	14				
▼ SDA 2812 A	12-bit / 100 kHz / serial out	P-DIP-16-1	-A8355	25				

Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

1) Ersatz für SDA 0810 B, 1810 D
Replacement for SDA 0810 B, 1810 D

Typ Type	Funktion Function	Gehäuse Package	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Zeitgeberschaltungen – Programmierbare Digitale Timer Timer ICs – Programmable Digital Timers								
			Q67000-					
SAE 0530[1]	≤ 31.5 h; 50 Hz op.	P-DIP-18-1	-H8403	20				
SAE 0531	≤ 31.5 h; 60 Hz op.	P-DIP-18-1	-H8431	20				
SAE 0532 G[2]	≤ 31.5 h; 50/60 Hz	P-DSO-20-1	-H8432	40				
			Q67100-					
■ TBB 278 B	Videoimpulsgeber Video pulse generator	P-DIP-22-1	-H8759	105				
Gong-ICs								
			Q67000-					
SAB 0600	Dreiklang-Gong IC Three-tone chime IC	P-DIP-8-1	-H1948	50				
SAB 0601	Einklang-Gong Single-tone chime	P-DIP-8-1	-H2312	50				
SAB 0602	Zweiklang-Gong Dual-tone chime	P-DIP-8-1	-H2313	50				
▼ SAE 800	Programmierbarer Ein-, Zwei-, Dreiklang- Gong IC	P-DIP-8-1	-A8339	50				
▼ SAE 800 G	Programmable Single/ Dual/Triple Gong IC	P-DSO-8-1	-A8340	100				
Ansteuerschaltungen für Motoren Motor Control ICs								
			Q67100-					
■ SLE 4520	Pulsweitenmodulator Pulse width modulator	P-DIP-28-1	-H8271	14				
			Q67000-					
TCA 3727	2-Phasen-Schrittmotor- treiber IC	P-DIP-20-3	-A8302	20				
TCA 3727 G	2-phase stepper motor driver IC	P-DSO-24-3	-A8335	30				

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

1) Ersatz für SAB 529.
Replacement for SAB 529.
2) Ersatz für SAB 529 G.
Replacement for SAB 529 G.

2

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
Näherungsschalter Proximity Switches								
			Q67000-					
TCA 305 A	Stromaufnahme	P-DIP-14-1	-A2291	25				
TCA 305 G	< 1 mA	P-DSO-14-1	-A2305	50				
TCA 355 B	Current consumption < 1 mA	P-DIP-8-1	-A2443	50				
TCA 505 B[1)]		P-DIP-16-1	-A8344	25				
TCA 505 BG[2)]		P-DSO-16-1	-A8341	25				
Dimmer Dimmers								
			Q67100-					
SLB 0586 A	Dimmer-IC für Glühlampen	P-DIP-8-1	-H8721	50				
SLB 0586 G	Dimmer-IC for lamps	P-DSO-8-1	-H8720	100				
SLB 0587	Dimmer-IC für Glüh- und Halogenlampen	P-DIP-8-1	-A8310	50				
SLB 0587 G	Dimmer IC for halogen lamps	P-DSO-8-1	-A8315	100				

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

1) Ersatz für TCA 505 A.
Replacement for TCA 505 A.
2) Ersatz für TCA 505 G.
Replacement for TCA 505 G.

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
ICs für Mobile Kommunikation **ICs for Mobile Communication**								
TBB 204 G	Mixer IC	P-DSO-14	Q67000- -A8213	15				
TBB 200	PLL-Frequenz-	P-DIP-14	Q67100- -H8215	10				
TBB 200 G	Synthesizer mit I^2C-Bus PLL Frequency Synthesizer with I^2C-Bus	P-DSO-14	-H8216	10				
TBB 206	PLL-Frequenz-	P-DIP-14	-H8722	10				
TBB 206 G	Synthesizer mit 3-Leiter Bus PLL Frequency Synthesizer with 3-line Bus	P-DSO-14	-H8723	10				
▼ PMB 2200 S	GSM Sender GSM Transmitter	P-DSO-24-4	Q67000- -A6060	5				
PMB 2200 T	GSM Sender GSM Transmitter	P-DSO-20	-A6025	5				
PMB 2400 T	GSM Empfänger GSM Receiver	P-DSO-24	-A6024	5				
▼ PMB 2205 S	Quadratur Modulator Baustein Quadratur Modulator Circuit	P-DSO-24-4	-A6066	5				
▼ PMB 2210 T	Quadratur Modulator Baustein Quadratur Modulator Circuit	P-DSO-20	-A6028	5				
▼ PMB 2306 T	PLL-Frequenz Synthesizer PLL-Frequency Synthesizer	P-DSO-14	-H6333	10				

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
ICs für Mobile Kommunikation ICs for Mobile Communication								
			Q67000-					
▼ PMB 2312 T	Prescaler Baustein Prescaler Circuit	P-DSO-8	-A6039	15				
▼ PMB 2330 T	2-GHz Mischer 2-GHz Mixer	P-DSO-8	-A6045	15				
▼ PMB 2401 T	GSM Empfänger GSM Receiver	P-DSO-28	-A6061	5				
▼ PMB 2401 S	GSM Empfänger GSM Receiver	P-DSO-28-4	-A6062	5				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
ISDN							
			Q67100-				
▼● PEB 2025-N-V1.5	ISDN Exchange Power Controller	P-LCC-28-1	-H6300	30			
● PEB 2055-P-VA3	Extended PCM Interface Controller (EPIC®–1)	P-DIP-40	-H6036	2			
● PEB 2055-N-VA3	Extended PCM Interface Controller (EPIC®–1)	P-LCC-44	-H6035	2			
● PEB 2070-P-V2.4	ISDN	P-DIP-24	-H6212	1			
● PEB 2070-N-V2.4	Communications Controller (ICC)	P-LCC-28-1	-H6213	5			
● PEB 2075-N-V1.3	ISDN D-Channel Exchange Controller (IDEC)	P-LCC-44	-H6189	2			
▼● PEB 2080-N-VB1	S-Bus Circuit (SBC)	P-LCC-28-1	-H8395	5			
● PEB 2095-N-VA5	ISDN Burst Transceiver Circuit (IBC)	P-LCC-28-1	-H8396	5			
Digitale Sprach-Datenterminals Digital Speech-Data Terminals							
			Q67100-				
● PEB 2085-P-V2.3	ISDN Subscriber	P-DIP-40	-H6219	2			
● PEB 2085-N-V2.3	Access Contr. (ISAC®-S)	P-LCC-44	-H6218	2			
● PSB 2110-P-V2.2	ISDN Terminal	P-DIP-40	-H6294	2			
● PSB 2110-N-V2.2	Adapter Circuit (ITAC®)	P-LCC-44	-H6293	25			
● PSB 2120-P-VB4	ISDN Remote Power Controller (IRPC)	P-DIP-22	-H8645	5			
● PSB 2121-P-VA4	General Purpose	P-DIP-16	-H8646	10			
● PSB 2121-T-VA4	Power Controller (GPPC)	P-DSO-20	-H6032	10			

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
Digitale Sprach-Datenterminals Digital Speech-Data Terminals							
● PSB 2160-P-V2.2	Audio-Ringing CODEC-Filter (ARCOFI®)	P-DIP-24	Q67100- -H8503	5			
● PSB 2160-N-V2.2	Audio-Ringing CODEC-Filter (ARCOFI®)	P-LCC-28-1	-H6031	5			
▼● PSB 2165 P	Audio-Ringing CODEC-Filter	P-DIP-24	-H6168	14			
▼● PSB 2165 N	Featuring Speakerphone Function (ARCOFI®-SP)	P-LCC-28-1	-H6169	30			

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Funktion Function	Gehäuse Package	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
ICs für Digitale Vermittlungssysteme ICs for Digital Exchange Systeme							
			Q67100-				
● PEB 2045-P-VA3	Memory Time	P-DIP-40	-H8322	2			
● PEB 2045-N-VA3	Switch CMOS (MTSC)	P-LCC-44	-H8602	2			
● PEB 2046-P-VA3	Memory Time	P-DIP-40	-H6105	5			
● PEB 2046-N-VA3	Switch Small (MTSS)	P-LCC-44	-H6104	5			
● PEB 2047-N-V2.1	Memory Time Switch Large (MTSL)	P-LCC-44	-H6238	1			
● PEB 2050-P-VB1	Peripheral Board	P-DIP-40	-H3032	2			
● PEB 2050-N-VB1	Controller (PBC)	P-LCC-44	-H8392	2			
● PEB 2055-N-VA3	Extended PCM	P-LCC-44	-H6035	2			
● PEB 2055-P-VA3	Interface Controller (EPIC™–1)	P-DIP-40	-H6036	1			
● PEB 2060-P-V4.4	Signal Processing	P-DIP-22	-Z170	5			
● PEB 2060-N-V4.4	Codec Filter (SICOFI®)	P-LCC-28-1	-H8393	5			
● PEB 2260-N-V2.0	Dual SICOFI (SICOFI®–2)	P-LCC-28	-H6191	5			
● PEB 2235-P-V4.1	ISDN Primary	P-DIP-28	-H6207	1			
● PEB 2235-N-V4.1	Rate Transceiver (IPAT®)	P-LCC-28	-H6208	5			
● PEB 2245-N-V1.2	Multipoint Switching and Conferencing (MUSAC)	P-LCC-44	-H6209	1			
Datacom ICs							
			Q67100-				
● SAB 82520-P-VB2	High-Level Serial	P-DIP-28	-H8014	2			
● SAB 82520-N-VB2	Communications Controller (HSCC)	P-LCC-28-1	-H8400	2			
● SAB 82525-N-VAA3	HDLC Protocol	P-LCC-44	-H8590	2			
● SAB 82526-N-VAA3	Controller (HSCX)	P-LCC-44	-H6111	5			
● SAB 82532-N-V2.2	Serial Controller (2 channels) for SYNC/ ASYNC protocolls	P-LCC-68	-H6351	1			
● SAB 82532-N-10-V2.2		P-LCC-68	-H6353	1			

▒ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

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Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
ICs für Analoge Endgeräte **ICs for Analog Telephone Sets**							
			Q67000-				
PSB 4500	Speech Circuits	P-DIP-20	-A8146	20			
PSB 4500-T		P-DSO-20	-A8147	20			
PSB 4501		P-DIP-20	-A8148	20			
PSB 4501-T		P-DSO-20	-A8149	20			
PSB 4506-V1.2	Enhanced Speech	P-DIP-28	-A6017	10			
PSB 4506-A-V1.2	Circuits (ESC)	P-DIP-28	-A6019	10			
PSB 4506-AT-V1.2		P-DSO-28	-A6031	10			
PSB 45030-V1.2	Hands-Free-Add-	P-DIP-28	-A6020	10			
PSB 45030-T-V1.2	On-Circuit (HAC)	P-DSO-28	-A6015	10			
PSB 6520-2	Tone Ringer IC	P-DIP-8	-A8093	50			
PSB 6521-2	(TRI)	P-DIP-8	-A8094	50			
			Q67100-				
PSB 8510-1-V1.1	Programmable	P-DIP-20	-H6109	20			
PSB 8510-1T-V1.1	Dialing	P-DSO-20	-H6148	40			
PSB 8510-6-V1.1	Circuit (PDC)	P-DIP-20	-H6223	10			
PSB 8510-6T		P-DSO-20	-H6225	10			

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

System-Bausteine
System Components

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
DMA-Steuerung DMA Controller							
SAB 82C257-1-N	10 MHz, CMOS	P-LCC-68	Q67120-P311	18			
SAB 82258A-A	8 MHz	C-PGA-68	Q67120-P248	15			
SAB 82258A-N	8 MHz	P-LCC-68	Q67120-P246	18			
SAB 82258A-R	8 MHz	C-CC-68	Q67120-P250	20			
SAB 82258A-1-A	10 MHz	C-PGA-68	Q67120-P247	15			
SAB 82258A-1-N	10 MHz	P-LCC-68	Q67120-P245	18			
SAB 82258A-1-R	10 MHz	C-CC-68	Q67120-P249	20			
SAB 82C258A-1-N	10 MHz, CMOS	P-LCC-68	Q67120-P312	18			
SAB 82C258A-12-N	12,5 MHz, CMOS	P-LCC-68	Q67120-P313	18			
SAB 82C258A-16-N	16 MHz, CMOS	P-LCC-68	Q67120-P314	18			
SAB 82C258A-20-N	20 MHz, CMOS	P-LCC-68	Q67120-P323	18			
SAB 82257-N	8 MHz	P-LCC-68	Q67120-P176	18			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

3

Speicher-Bausteine

Memory Components

3

Speicher-Bausteine (DRAMs)
Memory Components (DRAMs)

Typ Type	Zugriffszeit Access Time	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	
1M × 1-bit					
HYB 511000B-60	60 ns	P-DIP-18-2	Q67100-Q512	16	
HYB 511000B-70	70 ns	P-DIP-18-2	Q67100-Q427	16	
HYB 511000BJ-60	60 ns	P-SOJ-26/20-1	Q67100-Q515	16	
HYB 511000BJ-70	70 ns	P-SOJ-26/20-1	Q67100-Q430	16	
HYB 511000BZ-60	60 ns	P-ZIP-20/19	Q67100-Q521	16	
HYB 511000BZ-70	70 ns	P-ZIP-20/19	Q67100-Q522	16	
256K × 4-bit					
HYB 514256B-60	60 ns	P-DIP-20-2	Q67100-Q530	16	
HYB 514256B-70	70 ns	P-DIP-20-2	Q67100-Q433	16	
HYB 514256BJ-60	60 ns	P-SOJ-26/20-1	Q67100-Q533	16	
HYB 514256BJ-70	70 ns	P-SOJ-26/20-1	Q67100-Q436	16	
HYB 514256BZ-60	60 ns	P-ZIP-20/19	Q67100-Q539	16	
HYB 514256BZ-70	70 ns	P-ZIP-20/19	Q67100-Q540	16	
4M × 1-bit					
HYB 514100BJ-70	70 ns	P-SOJ-26/20-1	Q67100-Q712	8	
HYB 514100BJ-80	80 ns	P-SOJ-26/20-1	Q67100-Q711	8	
1M × 4-bit					
HYB 514400BJ-70	70 ns	P-SOJ-26/20-1	Q67100-Q715	8	
HYB 514400BJ-80	80 ns	P-SOJ-26/20-1	Q67100-Q714	8	

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Speicher-Module mit DRAMs
Memory Modules with DRAMs

Typ Type	Zugriffszeit Access Time	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs.*) Min.	
1M × 9-bit					
HYM 91000S-60	60 ns	L-SIM-30-3	Q67100-Q470	2	
HYM 91000S-70	70 ns	L-SIM-30-3	Q67100-Q445	2	
▼ HYM 32200S-70	70 ns	L-SIM-30-1	Q67100-Q644	2	
▼ HYM 32200S-80	80 ns	L-SIM-30-1	Q67100-Q580	2	
4M × 9-bit					
HYM 94500S-70	70 ns	L-SIM-30-3	Q67100-Q582	1	
HYM 94500S-80	80 ns	L-SIM-30-3	Q67100-Q573	1	
1M × 36-bit					
HYM 361120GS-70	70 ns	L-SIM-72-3	Q67100-Q623	1	
HYM 361120GS-80	80 ns	L-SIM-72-3	Q67100-Q624	1	
▼ HYM 361110GS-70	70 ns	L-SIM-72-5	Q67100-Q737	1	
▼ HYM 361110GS-80	80 ns	L-SIM-72-5	Q67100-Q738	1	
2M × 36-bit					
HYM 362120GS-70	70 ns	L-SIM-72-4	Q67100-Q645	1	
HYM 362120GS-80	80 ns	L-SIM-72-4	Q67100-Q646	1	

Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

*) keine Lieferung unter Mindestabnahmemenge
no shipment below min. quantity

4

Mikrocontroller-Bausteine
Mikroprozessor-Bausteine

Microcontroller Components
Microprocessor Components

8-Bit Ein-Chip-Mikrocontroller (ohne ROM)
8-Bit Single-Chip Microcontrollers (without ROM)

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 999
SAB 8031A-N		P-LCC-44	Q67120-C271	25			
SAB 8031A-P		P-DIP-40	Q67120-C183	20			
SAB 8031A-16-N		P-LCC-44	Q67120-C349	25			
SAB 8031A-16-P		P-DIP-40	Q67120-C347	10			
SAB 8031A-20-N		P-LCC-44	Q67120-C467	25			
SAB 8031A-20-P		P-DIP-40	Q67120-C466	10			
SAB 8032B-N		P-LCC-44	Q67120-C423	25			
SAB 8032B-P		P-DIP-40	Q67120-C419	10			
SAB 8032B-16-N		P-LCC-44	Q67120-C425	25			
SAB 8032B-16-P		P-DIP-40	Q67120-C421	10			
SAB 8032B-20-P		P-DIP-40	Q67120-C471	10			
SAB 80535-N		P-LCC-68	Q67120-C241	18			
SAB 80C32-N	CMOS	P-LCC-44	Q67120-C395	25			
SAB 80C32-P	CMOS	P-DIP-40	Q67120-C378	20			
SAB 80C32-16-N	CMOS	P-LCC-44	Q67120-C502	25			
SAB 80C32-16-P	CMOS	P-DIP-40	Q67120-C500	10			
SAB 80C32-20-N	CMOS	P-LCC-44	Q67120-C711	25			
SAB 80C32-20-P	CMOS	P-DIP-40	Q67120-C709	10			
▼ SAB-C503-LN	CMOS	P-LCC-44	Q67120-C835	25			
SAB 80C535-N	CMOS	P-LCC-68	Q67120-C508	18			
SAB 80C535-16-N	CMOS	P-LCC-68	Q67120-C509	18			
SAB 80C537-N	CMOS	P-LCC-84	Q67120-C452	15			
SAB 80C537-16-N	CMOS	P-LCC-84	Q67120-C722	15			
SAB 80C515A-N-18	CMOS	P-LCC-68	Q67120-C581	18			
SAB 80C517A-N-18	CMOS	P-LCC-84	Q67120-C583	15			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Funktion Function	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 999
für erweiterten Temperaturbereich von – 40 bis + 85 °C for Extended Temperature Range from – 40 to + 85 °C							
SAB 8031A-12-P-T40/85		P-DIP-40	Q67120-C230	10			
SAB 8032B-P-T40/85		P-DIP-40	Q67120-C427	10			
SAB 80535-N-T40/85		P-LCC-68	Q67120-C240	18			
SAB 80C32-P-T40/85	CMOS	P-DIP-40	Q67120-C520	10			
SAB 80C32-16-P-T40/85	CMOS	P-DIP-40	Q67120-C527	10			
SAB 80C535-N-T40/85	CMOS	P-LCC-68	Q67120-C510	18			
SAB 80C535-16-N-T40/85	CMOS	P-LCC-68	Q67120-C562	18			
SAB 80C537-N-T40/85	CMOS	P-LCC-84	Q67120-C484	15			
SAB 80C537-16-N-T40/85	CMOS	P-LCC-84	Q67120-C725	15			
SAB 80C515A-N18-T3	CMOS	P-LCC-68	Q67120-C784	18			
SAB 80C517A-N18-T3	CMOS	P-LCC-84	Q67120-C769	15			
Experimentierplatine für 8-Bit Single-Chip Mikrocontroller Experimental Board for 8-Bit Single-Chip Microcontrollers							
EMOD-C517	–	–	Q67120-C486	1			
EPC 535	–	–	Q67120-C300	1			
16-Bit Ein-Chip-Mikrocontroller (ohne ROM) 16-Bit Single-Chip Microcontrollers (without ROM)							
SAB 80C166-S	CMOS	P-BQFP-100	Q67121-C493	1			
▼ SAB 80C166-M	CMOS	P-MRFP-100	Q67121-C848	1			
▼ SAB-C167-LM	CMOS	P-MQFP-144	Q67121-C836	1			
für erweiterten Temperaturbereich von – 40 bis + 85 °C for Extended Temperature Range from – 40 to + 85 °C							
▼ SAB 80C166-S-T3	CMOS	P-BQFP-100	Q67121-C794	1			
▼ SAB 80C166-M-T3	CMOS	P-MRFP-100	Q67121-C900	1			
▼ SAF-C167-LM	CMOS	P-MQFP-144	Q67121-C910	1			

░ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Typ Type	Takt Clock	Gehäuse Package	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 999
32-Bit RISC Mikroprozessoren **32-Bit RISC Microprocessors**							
SAB-R 3000A-25-AE	25 MHz	C-PGA-175	Q67120-C590	1			
● SAB-R 3000A-33-AE	33 MHz	C-PGA-175	Q67120-C498	1			
32/64-Bit Gleitkomma-Koprozessoren **32/64-Bit Floating-Point Accelerators**							
SAB-R 3010A-25-A	25 MHz	C-PGA-84	Q67120-C593	1			
● SAB-R 3010A-33-A	33 MHz	C-PGA-84	Q67120-C499	1			

Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

4

Semicustom-Schaltungen

Semicustom ICs

5

Gate Arrays

Typ Type	Funktion Function	Gehäuse Package[1)]	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99
			Q67000-			
SH 133 C01	D-Flipflop-1 GHz	C-QFP-24	-H7036	1		
SH 133 C0 116	D-Flipflop-1 GHz	C-DIP-16	-H2878	1		
SH 133 C0 116-SO	D-Flipflop-1 GHz	P-DSO-14	-H3070	1		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für ICs«
For the package refer to Chapter »Package Outlines for ICs«

Einzelhalbleiter

Small-Signal Semiconductors

6

Symbole und Begriffe
Symbols and Terms

Symbol	Bezeichnung	Designation
C_T	Diodenkapazität	Diode capacitance
F	Rauschzahl	Noise figure
f_T	Transitfrequenz	Transition frequency
G	Leistungsverstärkung	Power gain
h_{FE}	Strom-Verstärkung	Current gain
I_C	Kollektorstrom	Collector current
I_D	Drain-Gleichstrom	Continuous drain current
I_F	Durchlaßstrom	Forward current
I_R	Sperrstrom	Reverse current
P_{1dB}	1 dB-Kompressionspunkt	1 dB Compression point
r_F	Flußwiderstand	Forward resistance
R	Widerstand	Resistance
r_S	Serienwiderstand	Series resistance
V_F	Durchlaßspannung	Forward voltage
V_S	Versorgungsspannung	Supply voltage
V_{DS}	Drain-Source-Spannung	Drain-source voltage
V_R	Sperrspannung	Reverse voltage
V_{CB0}	Kollektor-Basis-Spannung	Collector-base voltage
V_{CE0}	Kollektor-Emitter-Spannung	Collector-emitter voltage
V_{CER}	Kollektor-Emitter-Sperrspannung	Collector-emitter reverse voltage
$V_{I(on)}$	Einschaltspannung	Input voltage

Die Werte von V_R, V_{CEO}, V_{DS}, I_F, I_C, I_O, P_{tot} sind Maximum-Angaben.
Kennwerte zu V_F, $V_{I(on)}$, r_f, C_T, F, f_T, G, h_{FE}, R, I_R siehe Datenbücher Einzelhalbleiter I und II.

Values of V_R, V_{CEO}, V_{DS}, I_F, I_C, I_O, P_{tot} are maximum values.
For characteristic values of V_F, $V_{I(on)}$, r_f, C_T, F, f_T, G, h_{FE}, R, I_R refer to data books Small-Signal Semiconductors I and II.

NF-Dioden
AF Diodes

Typ Type	V_R V	V_F V	I_F mA	Anschluß Terminal	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
Schaltdioden im SOT-23-Gehäuse (8-mm-Gurt) Switching Diodes in SOT-23 Package (8-mm Tape)										
						Q62702-				
BAL 74	50	≤ 1,0	250	a	5	-A718	2000			
BAR 74	50	≤ 1,0	250	b	5	-A704	2000			
BAS 16	75	≤ 1,25	250	b	5	-A739	2000			
BAS 19	100	≤ 1,25	250	b	5	-A95	1000			
BAS 20	150	≤ 1,25	250	b	5	-A113	1000			
BAS 21	200	≤ 1,25	250	b	5	-A79	1000			
						Q68000-				
BAV 70	70	≤ 1,25	200	c	5	-A6622	1000			
BAV 99	70	≤ 1,25	200	e	5	-A549	1000			
						Q62702-				
BAW 56	70	≤ 1,25	200	d	5	-A688	1000			
Schaltdioden im SOT-323-Gehäuse (8-mm-Gurt) Switching Diodes in SOT-323 Package (8-mm Tape)										
						Q62702-				
BAS 16W	75	≤ 1,25	250	b	9	-A1050	2000			
BAV 70W	70	≤ 1,25	200	c	9	-A1030	1000			
BAV 99W	70	≤ 1,25	200	e	9	-A1051	1000			
BAW 56W	70	≤ 1,25	200	d	9	-A1031	1000			
Schaltdioden im SOT-143-Gehäuse (8-mm-Gurt) Switching Diodes in SOT-143 Package (8-mm Tape)										
						Q62702-				
BAS 28	75	≤ 1,25	200	a	7	-A77	500			
BAW 101	300	≤ 1,3	250	a	7	-A712	300			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

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NF-Dioden
AF Diodes

Typ Type	V_R V	V_F V	I_F mA	Anschluß Terminal	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
Schaltdioden im SOT-223-Gehäuse (12-mm-Gurt) Switching Diodes in SOT-223 Package (12-mm Tape)										
						Q62702-				
BAS 78 D	400	≤ 1,6	1000	a	8	-A0913	150			
BAS 79 D	400	≤ 1,6	1000	b	8	-A0917	150			
Schottky-Dioden im SOT-23-Gehäuse (8-mm-Gurt) Schottky Diodes in SOT-23 Package (8-mm Tape)										
						Q62702-				
BAS 40	40	≤ 1,0	120	b	5	-D339	200			
BAS 40-04	40	≤ 1,0	120	e	5	-D980	150			
BAS 40-05	40	≤ 1,0	120	c	5	-D979	150			
BAS 40-06	40	≤ 1,0	120	d	5	-D978	150			
BAS 70	70	≤ 1,0	70	b	5	-A118	200			
BAS 70-04	70	≤ 1,0	70	e	5	-A730	150			
BAS 70-05	70	≤ 1,0	70	c	5	-A711	150			
BAS 70-06	70	≤ 1,0	70	d	5	-A774	150			
BAT 64	30	≤ 1,0	250	b	5	-A879	300			
BAT 64-04	30	≤ 1,0	250	e	5	-A961	200			
BAT 64-05	30	≤ 1,0	250	c	5	-A962	200			
BAT 64-06	30	≤ 1,0	250	d	5	-A963	200			
Schottky-Dioden im SOT-143-Gehäuse (8-mm-Gurt) Schottky Diodes in SOT-143 Package (8-mm Tape)										
						Q62702-				
BAS 40-07	40	≤ 1,0	120	a	7	-D1314	100			
BAS 70-07	70	≤ 1,0	70	a	7	-A846	100			
BAT 64-07	30	≤ 1,0	250	a	7	-A964	200			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Transistoren im TO-92-Gehäuse NPN Transistors in TO-92 Package											
							Q62702-				
BC 167 A	45	100	200	≤ 220	a	14	-C74	1000			
BC 167 B	45	100	200	≤ 450	a	14	-C75	1000			
BC 237 A	45	100	200	≤ 220	a	13	-C276	2000			
BC 237 B	45	100	200	≤ 450	a	13	-C277	2000			
BC 238 B	20	100	200	≤ 450	a	13	-C279	2000			
BC 238 C	20	100	200	≤ 800	a	13	-C280	2000			
BC 239 C	20	50	200	≤ 800	a	13	-C282	2000			
BC 337-16	45	800	150	≤ 250	a	13	-C313-V3	1000			
BC 337-25	45	800	150	≤ 400	a	13	-C313-V1	1000			
BC 337-40	45	800	150	≤ 630	a	13	-C313-V2	1000			
BC 338-25	25	800	150	≤ 400	a	13	-C314-V2	1000			
BC 338-40	25	800	150	≤ 630	a	13	-C314-V3	1000			
BC 368	20	1000	100	≤ 375	b	13	-C747	500			
BC 546 B	65	100	200	≤ 450	a	13	-C687-V2	2000			
BC 547 B	45	100	200	≤ 450	a	13	-C688-V2	2000			
BC 548 B	30	100	200	≤ 450	a	13	-C689-V2	2000			
BC 548 C	30	100	200	≤ 800	a	13	-C689-V3	2000			
BC 549 C	30	100	200	≤ 800	a	13	-C690-V2	2000			
BC 550 C	45	100	200	≤ 800	a	13	-C691-V2	2000			
							Q68000-				
BC 635	45	1000	70	≤ 250	b	13	-A3360	500			
BC 637	60	1000	70	≤ 250	b	13	-A2285	500			
BC 639	80	1000	70	≤ 250	b	13	-A3361	500			

Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

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1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
PNP-Transistoren im TO-92-Gehäuse PNP Transistors in TO-92 Package											
							Q62702-				
BC 257 A	45	100	200	≤ 250	a	14	-C184	1000			
BC 257 B	45	100	200	≤ 475	a	14	-C206	1000			
BC 307 A	45	100	200	≤ 250	a	13	-C283	2000			
BC 307 B	45	100	200	≤ 475	a	13	-C324	2000			
BC 308 B	25	100	200	≤ 475	a	13	-C286	2000			
BC 308 C	25	100	200	≤ 800	a	13	-C393	2000			
BC 327-16	45	800	150	≤ 250	a	13	-C311-V3	1000			
BC 327-25	45	800	150	≤ 400	a	13	-C311-V4	1000			
BC 327-40	45	800	150	≤ 630	a	13	-C311-V2	1000			
BC 328-25	25	800	150	≤ 400	a	13	-C312-V4	1000			
BC 328-40	25	800	150	≤ 630	a	13	-C312-V2	1000			
BC 369	20	1000	1000	≤ 375	b	13	-C748	500			
BC 556 B	65	100	200	≤ 475	a	13	-C692-V2	2000			
BC 557 B	45	100	200	≤ 475	a	13	-C693-V2	2000			
BC 558 B	30	100	200	≤ 475	a	13	-C694-V2	2000			
BC 558 C	30	100	200	≤ 800	a	13	-C694-V3	2000			
BC 559 C	30	100	200	≤ 800	a	13	-C695-V3	2000			
BC 560 B	30	100	200	≤ 475	a	13	-C696-V2	1000			
BC 560 C	45	100	200	≤ 800	a	13	-C696-V3	1000			
							Q68000-				
BC 636	45	1000	125	≤ 250	b	13	-A3365	500			
BC 638	60	1000	125	≤ 250	b	13	-A3366	500			
BC 640	80	1000	125	≤ 250	b	13	-A3367	500			

Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Transistoren im SOT-23-Gehäuse (8-mm-Gurt)											
NPN Transistors in SOT-23 Package (8-mm Tape)											
						Q62702-					
BC 817-16	45	500	100 ... 250	f	5	-C1732	2000				
BC 817-25	45	500	160 ... 400	f	5	-C1690	2000				
BC 817-40	45	500	250 ... 630	f	5	-C1738	2000				
BC 818-25	25	500	160 ... 400	f	5	-C1740	2000				
BC 818-40	25	500	250 ... 630	f	5	-C1505	2000				
BC 846 B	65	100	200 ... 450	f	5	-C1746	2000				
BC 847 B	45	100	200 ... 450	f	5	-C1687	2000				
BC 847 C	45	100	420 ... 800	f	5	-C1715	2000				
BC 848 B	30	100	200 ... 450	f	5	-C1704	2000				
BC 848 C	30	100	420 ... 800	f	5	-C1506	2000				
BCW 60B	32	100	180 ... 310	f	5	-C1497	2000				
BCW 60C	32	100	250 ... 460	f	5	-C1476	2000				
BCW 60D	32	100	380 ... 630	f	5	-C1477	2000				
BCW 65B	32	800	160 ... 400	f	5	-C1612	2000				
BCW 65C	32	800	250 ... 630	f	5	-C1479	2000				
BCW 66G	45	800	160 ... 400	f	5	-C1526	2000				
BCW 66H	45	800	250 ... 630		5	-C1632	2000				
BCX 41	125	800	> 40	f	5	-C1659	300				
BCX 70H	45	100	180 ... 310	f	5	-C1481	2000				
BCX 70J	45	100	250 ... 460	f	5	-C1552	2000				
BCX 70K	45	100	380 ... 630	f	5	-C1571	2000				
NPN-Transistoren im SOT-323-Gehäuse (8-mm-Gurt)											
NPN Transistors in SOT-323 Package (8-mm Tape)											
						Q62702-					
BC 817-25W	45	500	160 ... 400	a	9	-C2278	2000				
BC 847BW	45	100	200 ... 450	a	9	-C2305	2000				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

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NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	$V_{I(on)}$ V	I_C mA	P_{tot} mW	Resistance Value R_1 kΩ	 R_2 kΩ	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Digital-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) NPN Digital Transistors in SOT-23 Package (8-mm Tape)													
									Q62702-				
BCR 108	50	10	100	330	2.2	47	f	5	-C2253	2000			
BCR 112	50	15	100	330	4.7	4.7	f	5	-C2254	2000			
BCR 119	50	15	100	330	4.7	–	f	5	-C2255	2000			
BCR 133	50	20	100	330	10	10	f	5	-C2256	2000			
BCR 135	50	20	100	330	10	47	f	5	-C2257	2000			
BCR 141	50	30	100	330	22	22	f	5	-C2258	2000			
BCR 142	50	30	100	330	22	47	f	5	-C2259	2000			
BCR 146	50	50	100	330	47	22	f	5	-C2260	2000			
BCR 148	50	50	100	330	47	47	f	5	-C2261	2000			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Transistoren im SOT-89-Gehäuse (12-mm-Gurt) NPN Transistors in SOT-89 Package (12-mm Tape)											
						Q62702-					
BCX 54	45	1000	40 ... 250	a	6	-C954	200				
BCX 54-10	45	1000	63 ... 160	a	6	-C1861	200				
BCX 54-16	45	1000	100 ... 250	a	6	-C1731	200				
BCX 55	60	1000	40 ... 250	a	6	-C1729	200				
BCX 55-10	60	1000	63 ... 160	a	6	-C1730	200				
BCX 55-16	60	1000	100 ... 250	a	6	-C1903	200				
BCX 56	80	1000	40 ... 250	a	6	-C1614	200				
BCX 56-10	80	1000	63 ... 160	a	6	-C1635	200				
BCX 56-16	80	1000	100 ... 250	a	6	-C1613	200				
BCX 68	20	1000	85 ... 375	a	6	-C1572	200				
PNP-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) PNP Transistors in SOT-23 Package (8-mm Tape)											
						Q62702					
BC 807-16	45	500	100 ... 250	f	5	-C1735	2000				
BC 807-25	45	500	160 ... 400	f	5	-C1689	2000				
BC 807-40	45	500	250 ... 630	f	5	-C1721	2000				
BC 808-25	25	500	160 ... 400	f	5	-C1504	2000				
BC 808-40	25	500	250 ... 630	f	5	-C1692	2000				
BC 856 B	65	100	220 ... 475	f	5	-C1886	2000				
BC 857 B	45	100	220 ... 475	f	5	-C1688	2000				
BC 857 C	45	100	420 ... 800	f	5	-C1851	2000				
BC 858 B	30	100	220 ... 475	f	5	-C1698	2000				
BC 858 C	3	100	420 ... 80			-C1507	2000				
BCW 61B	32	100	180 ... 310	f	5	-C1585	2000				
BCW 61C	32	100	250 ... 460	f	5	-C1478	2000				
BCW 61D	32	100	380 ... 630	f	5	-C1556	2000				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
PNP-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) PNP Transistors in SOT-23 Package (8-mm Tape)											
						Q62702-					
BCW 67B	32	800	160 … 400	f	5	-C1480	2000				
BCW 67C	32	800	250 … 630	f	5	-C1681	2000				
BCW 68G	45	800	160 … 400	f	5	-C1322	2000				
BCW 68H	45	800	250 … 630	f	5	-C1555	2000				
BCX 42	125	800	> 40		5	-C1485	300				
BCX 71H	45	100	180 … 310	f	5	-C1586	2000				
BCX 71J	45	100	250 … 460	f	5	-C1554	2000				
BCX 71K	45	100	380 … 630	f	5	-C1654	2000				
PNP-Transistoren im SOT-323-Gehäuse (8-mm-Gurt) PNP Transistors in SOT-323 Package (8-mm Tape)											
						Q62702-					
BC 807-25W	45	500	160 … 400	a	9	-C2326	2000				
BC 857BW	45	100	200 … 450	a	9	-C2294	2000				

Typ Type	V_{CEO} V	$V_{I(on)}$ V	I_C mA	P_{tot} mW	Resistance Value R_1 kΩ	 R_2 kΩ	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
PNP-Digital-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) PNP Digital Transistors in SOT-23 Package (8-mm Tape)													
									Q62702-				
BCR 183	50	20	100	330	10	10	f	5	-C2262	2000			
BCR 185	50	20	100	330	10	47	f	5	-C2263	2000			
BCR 191	50	30	100	330	22	22	f	5	-C2264	2000			
BCR 192	50	30	100	330	22	47	f	5	-C2265	2000			
BCR 198	50	50	100	330	47	47	f	5	-C2266	2000			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999
PNP-Transistoren im SOT-89-Gehäuse (12-mm-Gurt) **PNP Transistors in SOT-89 Package (12-mm Tape)**										
						Q62702-				
BCX 51	45	1000	40 ... 250	a	6	-C1847	200			
BCX 51-10	45	1000	63 ... 160	a	6	-C1831	200			
BCX 51-16	45	1000	100 ... 250	a	6	-C1857	200			
BCX 52	60	1000	40 ... 250	a	6	-C1743	200			
BCX 52-10	60	1000	63 ... 160	a	6	-C1744	200			
BCX 52-16	60	1000	100 ... 250	a	6	-C1900	200			
BCX 53	80	1000	40 ... 250	a	6	-C905	200			
BCX 53-10	80	1000	63 ... 160	a	6	-C1753	200			
BCX 53-16	80	1000	100 ... 250	a	6	-C1502	200			
BCX 69	20	1000	85 ... 375	a	6	-C1714	200			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

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1) Anschluß/Terminal

NF-Transistoren
AF Transistors

NPN-Transistoren im SOT-223-Gehäuse (12-mm-Gurt)
NPN Transistors in SOT-223 Package (12-mm Tape)

Typ Type	V_{CEO} V	I_C A	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
							Q62702-				
BCP 54	45	1	125	40 ... 250	c	8	-C2117	200			
BCP 54-10	45	1	125	63 ... 160	c	8	-C2119	200			
BCP 54-16	45	1	125	100 ... 250	c	8	-C2120	200			
BCP 55	60	1	125	40 ... 250	c	8	-C2148	200			
BCP 55-10	60	1	125	63 ... 160	c	8	-C2122	200			
BCP 55-16	60	1	125	100 ... 250	c	8	-C2123	200			
BCP 56	100	1	125	40 ... 250	c	8	-C2149	200			
BCP 56-10	100	1	125	63 ... 160	c	8	-C2125	200			
BCP 56-16	100	1	125	100 ... 250	c	8	-C2106	200			
BCP 68	25	1	100	63 ... 400	c	8	-C2126	200			

PNP-Transistoren im SOT-223-Gehäuse (12-mm-Gurt)
PNP Transistors in SOT-223 Package (12-mm Tape)

Typ Type	V_{CEO} V	I_C A	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
							Q62702-				
BCP 51	45	1	125	40 ... 250	c	8	-C2107	200			
BCP 51-10	45	1	125	63 ... 160	c	8	-C2109	200			
BCP 51-16	45	1	125	100 ... 250	c	8	-C2110	200			
BCP 52	60	1	125	40 ... 250	c	8	-C2146	200			
BCP 52-10	60	1	125	63 ... 160	c	8	-C2112	200			
BCP 52-16	60	1	125	100 ... 250	c	8	-C2113	200			
BCP 53	100	1	125	40 ... 250	c	8	-C2147	200			
BCP 53-10	100	1	125	63 ... 160	c	8	-C2115	200			
BCP 53-16	100	1	125	100 ... 250	c	8	-C2116	200			
BCP 69	25	1	100	63 ... 400	c	8	-C2130	200			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Darlington-Transistoren im TO-92-Gehäuse NPN Darlington Transistors in TO-92 Package												
							Q62702-					
BC 517	30	500	150	> 30000	a	13	-C825	500				
BC 875	45	1000	150	> 2000	b	13	-C853	300				
BC 877	60	1000	150	> 2000	b	13	-C854	300				
BC 879	80	1000	150	> 2000	b	13	-C855	300				
PNP-Darlington-Transistoren im TO-92-Gehäuse PNP Darlington Transistors in TO-92 Package												
							Q62702-					
BC 516	30	500	150	> 30000	a	13	-C944	500				
BC 876	45	1000	150	> 2000	b	13	-C943	300				
BC 878	60	1000	150	> 2000	b	13	-C942	300				
BC 880	80	1000	150	> 2000	b	13	-C941	300				

Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

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1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	500 bis/to 999	1000 bis/to 2999
NPN-Darlington-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) NPN Darlington Transistors in SOT-23 Package (8-mm Tape)										
							Q62702-			
BCV 27	30	500	170	≥ 20000	f	5	-C1474	500		
BCV 47	80	500	170	≥ 10000	f	5	-C1501	500		
PNP-Darlington-Transistoren im SOT-23-Gehäuse (8-mm-Gurt) PNP Darlington Transistors in SOT-23 Package (8-mm Tape)										
							Q62702-			
BCV 26	30	500	200	≥ 20000	f	5	-C1493	500		
BCV 46	60	500	170	≥ 10000	f	5	-C1475	500		

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Darlington-Transistoren im SOT-89-Gehäuse (12-mm-Gurt) NPN Darlington Transistors in SOT-89 Package (12-mm Tape)											
BCV 49	60	500	150	≥ 10000	a	6	Q62702- -C1832	200			
PNP-Darlington-Transistoren im SOT-89-Gehäuse (12-mm-Gurt) PNP Darlington Transistors in SOT-89 Package (12-mm Tape)											
BCV 48	60	500	200	≥ 10000	a	6	Q62702- -C1854	200			

▒ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Darlington-Transistoren im SOT-223-Gehäuse (12-mm-Gurt) NPN Darlington Transistors in SOT-223 Package (12-mm Tape)											
							Q62702-				
BCP 29	30	0,5	200	≥ 20000	c	8	-C2136	200			
BCP 49	60	0,5	200	≥ 10000	c	8	-C2137	200			
BSP 50	45	1,0	200	≥ 2000	c	8	-P1163	150			
BSP 51	60	1,0	200	≥ 2000	c	8	-P1164	150			
BSP 52	80	1,0	200	≥ 2000	c	8	-P1165	150			
PNP-Darlington-Transistoren im SOT-223-Gehäuse (12-mm-Gurt) PNP Darlington Transistors in SOT-223 Package (12-mm Tape)											
							Q62702-				
BCP 28	30	0,5	200	≥ 20000	c	8	-C2134	200			
BCP 48	60	0,5	200	≥ 10000	c	8	-C2135	200			
BSP 60	45	1,0	200	≥ 2000	c	8	-P1166	150			
BSP 61	60	1,0	200	≥ 2000	c	8	-P1167	150			
BSP 62	80	1,0	200	≥ 2000	c	8	-P1168	150			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

NF-Transistoren
AF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	1000 bis/to 2999	3000 bis/to 9999
NPN-Hochvolt-Transistor im TO-92-Gehäuse NPN High Voltage Transistor in TO-92 Package												
BFP 22	200	200	70	> 40	b	14	Q62702- -F621	400				
PNP-Hochvolt-Transistor im TO-92-Gehäuse PNP High Voltage Transistor in TO-92 Package												
BFP 23	200	200	70	> 40	b	14	Q62702- -F622	300				
NPN-Hochvolt-Transistor im SOT-23-Gehäuse (8-mm-Gurt) NPN High Voltage Transistor in SOT-23 Package (8-mm Tape)												
BFN 26	300	200	70	≥ 40	f	5	Q62702- -F976	300				
PNP-Hochvolt-Transistor im SOT-23-Gehäuse (8-mm-Gurt) PNP High Voltage Transistor in SOT-23 Package (8-mm Tape)												
BFN 27	300	200	100	≥ 40	f	5	Q62702- -F977	300				

Typ Type	V_{CEO} V	I_C mA	f_T MHz	h_{FE}	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999	
NPN-Hochvolt-Transistor im SOT-89-Gehäuse (12-mm-Gurt) NPN High Voltage Transistor in SOT-89 Package (12-mm Tape)												
BFN 16	250	200	70	≥ 40	a	6	Q62702- -F885	200				
PNP-Hochvolt-Transistor im SOT-89-Gehäuse (12-mm-Gurt) PNP High Voltage Transistor in SOT-89 Package (12-mm Tape)												
BFN 17	250	200	100	≥ 40	a	6	Q62702- -F884	200				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

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NF-Transistoren
AF Transistors

Typ Type	V_{CBO} V	I_C mA	f_T MHz	h_{FE}	[1]	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Hochvolt-Transistoren im SOT-223-Gehäuse (12-mm-Gurt) NPN High Voltage Transistors in SOT-223 Package (12-mm Tape)											
							Q62702-				
BF 720	300	50	100	≥ 50	c	8	-F1238	200			
BF 722	250	50	100	≥ 50	c	8	-F1306	200			
BFN 36	250	200	70	≥ 40	c	8	-F1246	200			
BFN 38	300	200	70	≥ 30	c	8	-F1303	200			
PNP-Hochvolt-Transistoren im SOT-223-Gehäuse (12-mm-Gurt) PNP High Voltage Transistors in SOT-223 Package (12-mm Tape)											
							Q62702-				
BF 721	300	50	100	≥ 50	c	8	-F1239	200			
BF 723	250	50	100	≥ 50	c	8	-F1309	200			
BFN 37	250	200	100	≥ 40	c	8	-F1304	200			
BFN 39	300	200	100	≥ 30	c	8	-F1305	200			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

HF-Dioden
RF Diodes

Typ Type	V_R V	I_F mA	V_F mV	Anschluß Terminal	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
Schottky-Dioden im SOT-23-Gehäuse (8-mm-Gurt) Schottky Diodes in SOT-23 Package (8-mm Tape)											
						Q62702					
BAT 17	4	130	340	b	5	-A504	200				
BAT 17-04	4	130	340	e	5	-A775	150				
BAT 17-05	4	130	340	c	5	-A776	150				
BAT 17-06	4	130	340	d	5	-A777	150				
BAT 68	8	130	320	b	5	-A926	200				
BAT 68-04	8	130	320	e	5	-A0004	200				
BAT 68-05	8	130	320	c	5	-A0015	200				
BAT 68-06	8	130	320	d	5	-A0019	200				
Schottky-Dioden im SOT-143-Gehäuse (8-mm-Gurt) Schottky Diodes in SOT-143 Package (8-mm Tape)											
						Q62702-					
BAT 14-099 R	–	90	480	e	7	-A42	40				
BAT 15-099 R	–	110	320	e	7	-A43	40				
BAT 68-07	8	130	320	d	7	-A0044	100				

Typ Type	V_R V	I_F mA	V_F mV	Anschluß Terminal	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999	
Schottky-Detektor Dioden im SOT-143-Gehäuse (8-mm-Gurt) Schottky-Detector Diodes in SOT-143 Package (8-mm Tape)												
						Q62702-						
BAT 62	40	20	580	d	7	-A971	50					

▒ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

HF-Dioden
RF Diodes

Typ Type	V_R V	r_F Ω	C_T pF	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
PIN-Dioden im SOT-23-Gehäuse (8-mm-Gurt) PIN Diodes in SOT-23 Package (8-mm Tape)											
						Q62702-					
BAR 14-1	100	7	0,25	e	5	-A772	150				
BAR 15-1	100	7	0,25	c	5	-A731	150				
BAR 16-1	100	7	0,25	d	5	-A773	150				
BAR 17	100	3,5	0,32	b	5	-A785	100				
BAR 64	200	2	0,25	b	5	-A1041	150				
BAR 64-04	200	2	0,25	e	5	-A1010	100				
BAR 64-05	200	2	0,25	c	5	-A1042	100				
BAR 64-06	200	2	0,25	d	5	-A1043	100				
PIN-Dioden im SOT-143-Gehäuse (8-mm-Gurt) PIN Diodes in SOT 143 Package (8-mm Tape)											
						Q62702-					
BAR 60	100	7	0,25	b	7	-A786	100				
BAR 61	100	7	0,25	c	7	-A120	50				
BAR 64-07	200	2	0,25	a	7	-A1044	100				

Abstimmdioden im SOT-23-Gehäuse (8-mm-Gurt)
Variable Capacitance Diodes in SOT-23 Package (8-mm Tape)

Typ Type	V_R V	I_R nA	C_T pF	C_{T1}/C_{T4} typ.	r_s Ω	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
BBY 51	7	10	2.7 … 7.5	1.75	0.37	c	5	Q62702- -B631	150			

▒ = SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

[1] Anschluß/Terminal

HF-Transistoren
RF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	10 bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
NPN-Breitbandtransistoren im Cerec-X-Gehäuse (12-mm-Gurt) NPN Broadband Transistors in Cerec-X Package (12-mm Tape)												
							Q62702-					
BFQ 70	15	35	5.0	18	a	1	-F774	10				
BFQ 71	15	30	5,2	15	a	1	-F775	10				
BFQ 72	15	50	5,1	18	a	1	-F776	10				
BFQ 73S	15	100	5,4	15	a	1	-F1104	10				
BFQ 74	16	35	6,0	14	a	1	-F778	10				
BFQ 82	12	80	8,0	11	a	1	-F1189	10				
BFQ 181	12	20	8,0	–	a	1	-F1295	10				
BFQ 645	12	40	9,0	11	a	1	-F1283	10				
NPN-Breitbandtransistoren im TO-72-Gehäuse NPN Broadband Transistors in TO-72 Package												
							Q62702-					
BFT 66	15	30	4,5	12	a	12	-F456	20				
BFR 15A	12	30	4,5	12	a	12	-F460	20				
BFS 55A	15	50	4,5	10	a	12	-F454	15				
BFX 59	20	100	0,9	–	b	12	-F422-E5	20				
BFX 59F	20	100	1,1	–	b	12	-F369-E4	20				
BFX 59R	20	100	1,1	–	b	12	-F370-E2	10				
BFY 90	15	25	2,0	8	b	12	-F297	30				
							Q60206-					
BFX 60	25	25	0,5	–	b	12	-X60	15				

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999	
NPN-Breitbandtransistoren im SOT-89-Gehäuse (12-mm-Gurt) NPN Broadband Transistors in SOT-89 Package (12-mm Tape)													
							Q62702-						
■ BFQ 17P	25	150	1,4	11,5	a	6	-F983	75					
BFQ 19S	15	75	5,1	11,8	a	6	-F1088	75					
BFQ 193	12	80	7,5	15	a	6	-F1312	75					

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

HF-Transistoren
RF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Breitbandtransistoren im SOT-23-Gehäuse (8-mm-Gurt) NPN Broadband Transistors in SOT-23 Package (8-mm Tape)												
							Q62702-					
BFQ 29P	15	30	5,0	14	f	5	-F659	75				
BFQ 81	16	30	5,8	15	f	5	-F1049	100				
BFR 35AP	12	30	4,9	14	f	5	-F938	100				
BFR 92P	15	30	5,0	14	f	5	-F1050	150				
BFR 93A	12	50	5,5	13,5	f	5	-F1086	150				
BFR 93P	15	50	5,0	13	f	5	-F1051	100				
BFR 180	8	4	6,2	14,5	f	5	-F1296	100				
BFR 280	8	10	7,0	16,5	f	5	-F1298	100				
BFR 181	12	20	8,0	18	f	5	-F1314	100				
BFR 182	12	35	8,0	18	f	5	-F1315	150				
BFR 183	12	65	8,0	18,5	f	5	-F1316	100				
BFR 193	12	80	8,0	15,8	f	5	-F1218	100				
BFS 17P	15	25	2,5	10	f	5	-F940	200				
PNP-Breitbandtransistoren im SOT-23-Gehäuse (8-mm-Gurt) PNP Broadband Transistors in SOT-23 Package (8-mm Tape)												
							Q62702-					
BFT 92	15	25	5,0	18	f	5	-F1062	100				
BFT 93	12	35	5,0	16,5	f	5	-F1063	100				
BFR 194	15	100	5	–	f	5	-F1346	100				
NPN-Breitbandtransistoren im SOT-323-Gehäuse (8-mm-Gurt) NPN Broadband Transistors in SOT-323 Package (8-mm Tape)												
							Q62702-					
BFR 180W	8	4	6,2	14,5	a	9	-F1490	100				
BFR 181W	12	20	8,0	18	a	9	-F1491	100				
BFR 182W	12	35	8,0	18	a	9	-F1492	100				
BFR 183W	12	65	8,0	18,5	a	9	-F1493	100				
BFR 193W	12	80	8,0	15,8	a	9	-F1510	100				
BFR 280W	8	10	7,0	16,5	a	9	-F1494	100				
BFR 92W	15	30	5,0	14,0	a	9	-F1488	100				
BFR 93AW	12	50	5,5	13,5	a	9	-F1489	100				
BFS 17W	15	25	2,5	11,0	a	9	-F1495	200				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

HF-Transistoren
RF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Breitbandtransistoren im T-plast-Gehäuse NPN Broadband Transistors in T-plast Package												
						Q62702-						
BFQ 69	15	30	5,8	16,5	10	-F780	50					
BFR 34A	12	30	5,0	14	10	-F346-S1	100					
BFR 90	15	30	5,0	14	10	-F560	200					
BFR 91	15	50	5,0	17	10	-F559	150					
BFR 91A	12	35	6,2	14	10	-F735	150					
BFT 65	15	50	5,0	12	10	-F451	100					
BFT 97	15	30	5,0	–	10	-F514	100					
BFT 98T	20	150	3,2	12	10	-F877	20					
BFW 92	15	25	2,4	11	10	-F321	300					
■ BFR 96	15	90	5	10	10	-F516	100					
BFR 96S	15	100	5,5	11,5	10	Q68000- -A5689	150					

Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

HF-Transistoren
RF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
NPN-Breitbandtransistoren im SOT-143-Gehäuse (8-mm-Gurt) NPN Broadband Transistors in SOT-143 Package (8-mm Tape)											
							Q62702-				
BFP 81	16	30	5,8	16,5	f	7	-F1122	100			
BFP 93A	12	50	5,5	16,5	f	7	-F1144	100			
BFP 180	8,0	4	6,2	16,5	f	7	-F1297	100			
BFP 280	8,0	10	7,0	20,0	f	7	-F1300	100			
BFP 181	12	20	8,0	20,0	f	7	-F1317	100			
BFP 182	12	35	8,0	18	f	7	-F1318	150			
BFP 183	12	65	8,0	20	f	7	-F1319	100			
BFP 193	12	80	8,0	15	f	7	-F1282	100			
BFP 196	12	100	7,2	16	f	7	-F1320	100			

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

HF-Transistoren
RF Transistors

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999	
PNP-Breitbandtransistor im SOT-143-Gehäuse (8-mm-Gurt) PNP Broadband Transistors in SOT-143 Package (8-mm Tape)													
							Q62702-						
BFP 194	15	100	5	–	f	7	-F1347	100					
NPN-Breitbandtransistoren im SOT-223-Gehäuse (12-mm-Gurt) NPN Broadband Transistors in SOT-223 Package (12-mm Tape)													
							Q62702-						
BFG 135A	15	150	5,9	15	d	8	-F1322	50					
BFG 235	12	300	6	–	d	8	-F1432	25					
BFG 19S	15	100	5,3	13	d	8	-F1359	100					
BFG 193	12	80	8,0	16	d	8	-F1291	150					
BFG 196	12	100	7,2	14	d	8	-F1292	50					
PNP-Breitbandtransistor im SOT-223-Gehäuse (12-mm-Gurt) PNP Broadband Transistor in SOT-223 Package (12-mm Tape)													
							Q62702-						
BFG 194	15	100	5	–	d	8	-F1321	50					

Typ Type	V_{CEO} V	I_C mA	f_T GHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499
NPN-Kleinleistungs-Transistoren im TO-117-Gehäuse NPN Low-Power Transistors in TO-117 Package												
							Q62702-					
BFT 98	20	200	3,3	15	–	15	-F523	5				
BFT 99	20	350	3,3	12	–	15	-F524	5				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

6

HF-GaAs-Feldeffekt-Transistoren
RF GaAs Fieldeffect Transistors

Typ Type	V_{DS} V	I_D mA	F dB	G dB	1)	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
GaAs-FET im Micro-X-Gehäuse (12-mm-Gurt) GaAs FET in Micro-X Package (12-mm Tape)														
							Q62703-							
CFY 25-17	5	80	1,6	9,5	–	3	-F106	5						
CFY 25-20	5	80	1,9	9,0	–	3	-F107	5						
CFY 25-23	5	80	2,2	9,0	–	3	-F108	5						
GaAs-FET im SOT-143-Gehäuse (8-mm-Gurt) GaAs FET in SOT-143 Package (8-mm Tape)														
							Q62703-							
CFY 30	5	80	1,4	11,5	g	7	-F97	30						
GaAs-FET im MW-4-Gehäuse (8-mm-Gurt) GaAs FET in MW-4 Package (8-mm Tape)														
							Q62702-							
CFY 35-20	5	60	1,9	–	–	4	-F1393	20						
GaAs-FET im SOT-223-Gehäuse (12-mm-Gurt) GaAs FET in SOT-223 Package (12-mm Tape)														
							Q62702-							
CLY 5	8	1200	26,5	9,5	e	8	-L92	10						
CLY 10	8	2100	28,5	9,5	e	8	-L91	5						

Typ Type	V_{DS} V	I_D mA	F dB	G dB	1)	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
Ga-As-HEMT FET im Micro-X-Gehäuse (12-mm-Gurt) GaAs HEMT FET in Micro-X Package (12-mm Tape)														
							Q62702-							
CFY 66-08	3,5	60	0,7	11	–	3	-F1456	3						
GaAs HEMT FET im MW-4-Gehäuse (8-mm-Gurt) GaAs HEMT FET in MW-4 Package (8-mm Tape)														
							Q62702-							
CFY 76-10	3,5	60	1,0	9	–	4	-F1514	10						

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

HF-GaAs-Feldeffekt-Transistoren
RF GaAs Fieldeffect Transistors

Typ Type	V_{DS} V	I_D mA	F dB	G_a (G_{ps}) dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
Dual Gate GaAs FET im SOT-143-Gehäuse (8-mm-Gurt) Dual Gate GaAs FET in SOT-143 Package (8-mm Tape)													
CF 739	10	80	1,8	(17)	h	7	Q62702-F1215	50					
CF 750	8	80	1,9	10	k	7	Q62702-F1391	50					

HF-GaAs-MMIC
RF GaAs MMICs

Typ Type	V_{DS} V	I_D mA	f MHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
GaAs-Breitbandverstärker im SOT-143-Gehäuse (8-mm-Gurt) GaAs Broadband Amplifier in SOT-143 Package (8-mm Tape)													
● CGY 50	< 7,5	60	> 200	8,5	i	7	Q68000-A8370	20					

Typ Type	V_{DS} V	I_D mA	f MHz	G dB	1)	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499	500 bis/to 999
GaAs-Breitbandverstärker im TO-12-Gehäuse GaAs Broadband Amplifier in TO-12-Package													
● CGY 21	< 6	160	> 100	21	–	11	Q68000-A5953	2					
GaAs-Breitbandverstärker im Cerec-X-Gehäuse (12-mm-Gurt) GaAs Broadband Amplifier in Cerec-X Package (12-mm Tape)													
● CGY 40	< 5,5	60	> 200	10,5	b	1	Q68000-A4444	5					

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für Einzelhalbleiter«
For the package refer to Chapter »Package Outlines for Small-Signal Semiconductors«

1) Anschluß/Terminal

SIPMOS-Halbleiter

SIPMOS Semiconductors

7

Symbole und Begriffe
Symbols and Terms

Symbol	Bezeichnung	Designation
dv/dt	Spannungssteilheit	Rate of voltage rise
I_D	Drain-Gleichstrom	Continuous drain current (DC drain current)
I_C	Kollektor-Gleichstrom	Collector current (DC)
I_F	Durchlaßstrom	Forward current
I_{FT}	Zündstrom	Forward current (LED)
I_{SC} typ.	Typ. Kurzschlußstrom	Short-circuit current typ.
I_H, I_{LAT}	Haltestrom, Einraststrom	Holding current, latching current
$I_{L\text{-}ISO}$	Drain-Gleichstrom (ISO-Standard)	Continous drain current (ISO standard)
$I_{L\text{-}MOS}$	Drain-Gleichstrom (MOS-Standard)	Continous drain current (MOS standard)
I_{FSM}	Stoßstromgrenzwert, Zündkreis	Surge forward current, input circuit
I_{TRMS}	Grenzeffektivstrom	RMS on-state current
I_{TSM}	Stoßstromgrenzwert, Lastkreis	Single cycle surge current, output circuit
P_{tot}	Max. Verlustleistung	Total power dissipation
$R_{DS\,(on)}$, R_{on}	Drain-Source-Einschaltwiderstand	Drain-source on-state resistance
R_{thJC}	Wärmewiderstand (Chip-Gehäuse)	Thermal resistance (chip case)
T_C	Gehäusetemperatur	Case temperature
T_{op}	Betriebstemperaturbereich	Operating temperature range
T_t	Übertemperaturschwelle	Over temperature threshold
V_{bb}	Betriebsspannung	Operating voltage
V_{CE}	Kollektor-Emitter-Spannung	Collector-emitter voltage
V_{DS}	Drain-Source-Spannung	Drain-source voltage
V_{DRM}, V_{RRM}	Spitzensperrspannung	Peak off-state or reverse voltage
$V_{GS\,(th)}$	Gate-Schwellenspannung	Gate threshold voltage
V_{IO}	Isolationsprüfspannung	Isolation test voltage
V_R	Sperrspannung	Reverse voltage

Die folgenden Anmerkungen haben für das gesamte Kapitel SIPMOS-Halbleiter Gültigkeit:

The following notes apply to the entire chapter SIPMOS Semiconductors:

1) Lieferung auf Super-8-mm-Filmträger, Abgabemenge: abhängig vom Typ, min. 25/50 Stück oder Vielfaches, max. 3000 Stück.

Delivery on Super-8-mm film carrier, quantity delivered: dependent on type, min. 25/50 items or multiples of that, max. 3000 items.

2) Lieferung auf Super-12-mm-Filmträger, Abgabemenge: abhängig vom Typ, min. 25/50 Stück oder Vielfaches, max. 1000 Stück.

Delivery on Super-12-mm film carrier, quantity delivered: dependent on type, min. 25/50 items or multiples of that, max. 1000 items.

SIPMOS-Leistungstransistoren
SIPMOS Power Transistors

Typ Type	V_{DS} V	I_D A	P_{tot} W	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
N-Kanal-Anreicherungstypen N-Channel Enhancement Types											
						C67078-					
⊜ BUZ 10	50	23	75	0,07	31a	-S1300-A2	50				
BUZ 10L*)	50	23	75	0,07	31a	-S1329-A2	50				
⊜ BUZ 11	50	30	75	0,04	31a	-S1301-A2	50				
⊜ BUZ 11A	50	26	75	0,055	31a	-S1301-A3	50				
BUZ 11AL*)	50	26	75	0,055	31a	-S1330-A3	50				
BUZ 12AL*)	50	42	125	0,035	31a	-S1332-A3	50				
⊜ BUZ 12	50	42	125	0,028	31a	-S1331-A2	50				
⊜ BUZ 12A	50	42	125	0,035	31a	-S1331-A3	50				
BUZ 15	50	45	125	0,03	27	-S1001-A2	20				
▼ BUZ 16	50	48	125	0,018	27	-S1020-A2	20				
⊜ BUZ 71	50	14	40	0,1	31a	-S1316-A2	100				
⊜ BUZ 71A	50	13	40	0,12	31a	-S1316-A3	100				
▼ BUZ 71AL	50	13	40	0,12	31a	-S1326-A2	100				
BUZ 71L*)	50	14	40	0,1	31a	-S1326-A5	100				
BUZ 346	50	58	170	0,018	28a	-S3120-A2	25				
▼ BUZ 347	50	45	125	0,03	28a	-S3115-A2	25				
▼ BUZ 10S2	60	23	75	0,07	28a	-S1300-A7	50				
BUZ 11S2	60	30	75	0,04	31a	-S1301-A5	50				
BUZ 71S2	60	14	50	0,1	31a	-S1316-A9	100				
⊜ BUZ 70	60	12	40	0,15	31a	-S1334-A2	100				
▼ BUZ 70L*)	60	12	40	0,15	31a	-S1325-A2	100				
⊜ BUZ 20	100	13,5	75	0,2	31a	-S1302-A2	50				
⊜ BUZ 21	100	21	75	0,085	31a	-S1308-A2	50				
⊜ BUZ 22	100	34	125	0,055	31a	-S1333-A2	50				
BUZ 24	100	32	125	0,06	27	-S1003-A2	20				
⊜ BUZ 72	100	10	40	0,2	31a	-S1313-A2	100				
⊜ BUZ 72A	100	9,0	40	0,25	31a	-S1313-A3	100				
▼ BUZ 72AL*)	100	9,0	40	0,25	31a	-S1327-A3	100				
BUZ 72L*)	100	10	40	0,2	31a	-S1327-A2	100				
BUZ 344	100	46	170	0,035	28a	-S3132-A2	25				
BUZ 345	100	41	150	0,045	28a	-S3121-A2	25				
BUZ 349	100	32	125	0,06	28a	-S3113-A2	25				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

*) Logic level

SIPMOS-Leistungstransistoren
SIPMOS Power Transistors

Typ Type	V_{DS} V	I_D A	P_{tot} W	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
N-Kanal-Anreicherungstypen N-Channel Enhancement Types											
						C67078-					
BUZ 30A	200	21	125	0,13	31a	-S1303-A3	50				
€ BUZ 31	200	13,5	75	0,2	31a	-S1304-A2	50				
€ BUZ 32	200	9,5	75	0,4	31a	-S1310-A2	50				
BUZ 36	200	22	125	0,12	27	-S1018-A2	20				
€ BUZ 73	200	7,0	40	0,4	31a	-S1317-A2	100				
€ BUZ 73A	200	5,8	40	0,6	31a	-S1317-A3	100				
▼ BUZ 73AL*)	200	5,8	40	0,6	31a	-S1328-A3	100				
▼ BUZ 73L*)	200	7,0	40	0,4	31a	-S1328-A2	100				
BUZ 341	200	33	170	0,070	28a	-S3128-A2	25				
BUZ 350	200	22	125	0,12	28a	-S3117-A2	25				
▼ BUZ 255	250	13	95	0,24	31a	-S1406-A2	50				
BUZ 60	400	5,5	75	1	31a	-S1312-A2	50				
▼ BUZ 61	400	12,5	150	0,4	31a	-S1341-A2	50				
BUZ 61A	400	11	150	0,5	31a	-S1341-A3	50				
BUZ 64	400	11,5	125	0,4	27	-S1017-A2	20				
BUZ 76	400	3,0	40	1,8	31a	-S1315-A2	100				
BUZ 76A	400	2,6	40	2,5	31a	-S1315-A3	100				
BUZ 205**)	400	6,0	75	1	31a	-A1401-A2	50				
BUZ 323	400	15	170	0,3	28a	-S3127-A2	25				
BUZ 325	400	12,5	125	0,35	28a	-S3118-A2	25				
BUZ 326	400	10,5	125	0,5	28a	-S3112-A2	25				
BUZ 382**)	400	12,5	125	0,4	28a	-A3207-A2	25				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

*) Logic level
**) FREDFET

SIPMOS-Leistungstransistoren
SIPMOS Power Transistors

Typ Type	V_{DS} V	I_D A	P_{tot} W	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
N-Kanal-Anreicherungstypen N-Channel Enhancement Types											
						C67078-					
BUZ 40B	500	8,0	150	0,8	31a	-S1305-A4	50				
BUZ 41A	500	4,5	75	1,5	31a	-A1306-A3	50				
BUZ 42	500	4,0	75	2,0	31a	-A1311-A2	50				
BUZ 45	500	9,6	125	0,6	27	-A1008-A8	20				
BUZ 45A	500	8,3	125	0,8	27	-A1008-A9	20				
BUZ 45B	500	10,0	125	0,5	27	-A1008-A10	20				
BUZ 74	500	2,4	40	3,0	31a	-S1314-A2	50				
BUZ 74A	500	2,1	40	4,0	31a	-S1314-A3	50				
BUZ 210*)	500	10,5	125	0,6	27	-A1102-A3	20				
BUZ 215*)	500	5,0	75	1,5	31a	-A1400-A2	50				
BUZ 330	500	9,5	125	0,6	28a	-S3105-A2	25				
BUZ 331	500	8,0	125	0,8	28a	-S3114-A2	25				
BUZ 338	500	13,5	180	0,4	28a	-S3126-A2	25				
BUZ 384*)	500	10,5	125	0,6	28a	-A3209-A2	25				
BUZ 385*)	500	9,0	125	0,8	28a	-A3210-A2	25				
BUZ 77A	600	2,7	40	4,0	31a	-S1320-A3	50				
BUZ 77B	600	2,0	40	3,5	31a	-S1320-A5	50				
BUZ 90	600	4,5	75	1,6	31a	-S1321-A2	50				
BUZ 90A	600	4,0	75	2,0	31a	-S1321-A3	50				
▼ BUZ 91	600	8,5	150	0,8	31a	-S1342-A2	50				
BUZ 91A	600	8,0	150	0,9	31a	-S1342-A2	50				
BUZ 92	600	2,4	75	3,0	31a	-S1343-A2	50				
BUZ 93	600	3,6	80	2,5	31a	-S1346-A2	50				
BUZ 94	600	7,5	125	0,9	27	-A1019-A2	20				
▼ BUZ 332	600	8,5	150	0,8	28a	-S3123-A2	25				
BUZ 332A	600	8,0	125	0,9	28a	-S3123-A4	25				
▼ BUZ 334	600	12,0	150	0,5	28a	-S3130-A2	25				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

*) FREDFET

SIPMOS-Leistungstransistoren
SIPMOS Power Transistors

Typ Type	V_{DS} V	I_D A	P_{tot} W	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
N-Kanal-Anreicherungstypen **N-Channel Enhancement Types**											
						C67078-					
BUZ 78	800	1,5	40	8	31a	-S1318-A2	50				
BUZ 80	800	2,6	75	4	31a	-S1309-A2	50				
BUZ 80A	800	3,0	75	3	31a	-A1309-A3	50				
▼ BUZ 81	800	4,0	125	2,5	31a	-S1345-A2	50				
BUZ 84	800	5,3	125	2	27	-A1013-A2	20				
BUZ 84A	800	6,0	125	1,5	27	-A1013-A3	20				
▼ BUZ 305	800	7,5	150	1,0	28a	-S3134-A2	25				
BUZ 307	800	3,0	75	3	28a	-A3100-A2	25				
BUZ 308	800	2,6	75	4	28a	-A3109-A2	25				
BUZ 355	800	6,0	125	1,5	28a	-A3107-A2	25				
BUZ 356	800	5,0	125	2	28a	-A3108-A2	25				
BUZ 50A	1000	2,5	75	5	31a	-A1307-A3	50				
BUZ 50B	1000	2,0	75	8	31a	-A1307-A4	50				
BUZ 50C	1000	2,3	75	6	31a	-A1307-A5	50				
▼ BUZ 51	1000	3,4	125	4,0	31a	-S1344-A2	50				
BUZ 53A	1000	2,5	78	5	27	-A1009-A3	20				
BUZ 54	1000	5,1	125	2	27	-S1010-A2	20				
BUZ 54A	1000	4,5	125	2,6	27	-S1010-A3	20				
BUZ 310	1000	2,5	75	5	28a	-A3101-A2	25				
BUZ 311	1000	2,3	75	6	28a	-A3102-A2	25				
▼ BUZ 312	1000	6,0	150	1,5	28a	-S3129-A2	25				
BUZ 357	1000	5,0	125	2	28a	-S3110-A2	25				
BUZ 358	1000	4,5	125	2,6	28a	-S3111-A2	25				
P-Kanal-Anreicherungstypen **P-Channel Enhancement Types**											
						C67078-					
BUZ 171	– 50	– 8,0	40	0,3	31a	-A1450-A2	50				
▼ BUZ 271	– 50	– 22	125	0,15	31a	-S1453-A2	50				
BUZ 172	– 100	– 5,5	40	0,6	31a	-A1451-A2	50				
▼ BUZ 272	– 100	– 15	125	0,30	31a	-S1454-A2	50				
BUZ 173	– 200	– 3,6	40	1,5	31a	-A1452-A2	50				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

IGBT-Leistungstransistoren
IGBT-Power Transistors

Typ Type	V_{CE} V	I_C A	P_{tot} W	R_{thJC} K/W	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
IGBT-Leistungstransistoren IGBT Power Transistors											
						C67078-					
BUP 202	1000	12	100	1,25	31b	-A4401-A2	50				
BUP 203	1000	21	165	1,25	31b	-A4402-A2	50				
▼ BUP 302	1000	12	100	1,25	28b	-A4205-A2	25				
▼ BUP 303	1000	21	165	1,25	28b	-A4202-A2	25				
BUP 304	1000	35	310	0,4	28b	-A4200-A2	25				
BUP 200	1200	5	50	2,5	31b	-A4400-A2	50				
BUP 300	1200	5	50	2,5	28b	-A4203-A2	25				
BUP 307	1200	35	310	0,4	28b	-A4201-A2	25				

Typ Type	V_{RRM} V	I_{FAV} A	$t_{rr\,(typ)}$ ns	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
Schnelle Dioden (FRED) Fast-Recovery Epitaxial Diodes (FRED)										
					C67047-					
▼ BYP 100	1000	5	50	30	-A2254-A2	25				
BYP 101	1000	15	80	30	-A2072-A2	25				
BYP 102	1000	28	130	30	-A2071-A2	25				
BYP 103	1000	45	140	30	-A2066-A2	25				
▼ BYP 301	1200	20	100	30	-A2251-A2	25				
▼ BYP 302	1200	40	140	30	-A2252-A2	25				
▼ BYP 303	1200	60	150	30	-A2253-A2	25				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

SIPMOS-Kleinsignal-Transistoren
SIPMOS Small-Signal Transistors

Typ Type	V_{DS} V	I_D mA	$V_{GS\,(th)}$ V	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
N-Kanal-Anreicherungstypen **N-Channel Enhancement Types**											
						Q67000-					
BSP 17	50	3200	2,1 … 4,0	0,1	25	-S220	50[2]				
BSP 295	50	1800	0,8 … 2,0	0,3	25	-S066	50[2]				
						Q62702-					
BSS 98	50	300	0,8 … 1,6	3,5	26a	-S464	200				
BSS 138	50	220	0,8 … 1,6	3,5	23	-S566	100[1]				
BSS 295	50	1400	0,8 … 2,0	0,3	26b	-S603	100				
						Q67000-					
BSP 318	60	2600	1,5 … 2,5	0,15	25	-S127	50[2]				
BS 170	60	300	0,8 … 2,0	5	26a	-S061	200				
SN 7000	60	250	0,8 … 2,0	5	26c	-S062	200				
SN 7002	60	190	0,8 … 2,0	5–	23	-S063	100[1]				
BSP 296	100	1000	0,8 … 2,0	0,8	25	-S067	50[2]				
						Q62702-					
BSS 100	100	220	0,8 … 2,0	6	26a	-S483	200				
BSS 119	100	170	1,6 … 2,6	6	23	-S631	100[1]				
BSS 123	100	170	0,8 … 2,0	6	23	-S512	100[1]				
BSS 296	100	800	0,8 … 2,0	0,8	26b	-S615	100				
						Q67000-					
BS 107	200	130	0,8 … 2,0	26	26b	-S060	200				
BSP 297	200	650	0,8 … 2,0	2	25	-S068	50[2]				
						Q62702-					
BSS 297	200	480	0,8 … 2,0	2	26b	-S616	100				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

[1], [2] siehe Seite 78/see Page 78

SIPMOS-Kleinsignal-Transistoren
SIPMOS Small-Signal Transistors

Typ Type	V_{DS} V	I_D mA	$V_{GS\,(th)}$ V	$R_{DS\,(on)}$ Ω	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
N-Kanal-Anreicherungstypen **N-Channel Enhancement Types**											
						Q67000-					
BSP 88	240	320	0,6 … 1,2	8	25	-S070	50[2]				
						Q62702-					
BSP 89	240	360	0,8 … 2,0	6	25	-S652	50[2]				
BSS 87	240	290	0,8 … 2,0	6	24	-S506	50[2]				
BSS 88	240	250	0,6 … 1,2	8	26b	-S454	50				
BSS 89	240	290	0,8 … 2,0	6	26b	-S455	50				
BSS 101	240	130	0,8 … 2,0	16	26a	-S484	200				
BSS 131	240	100	0,8 … 2,0	16	23	-S565	100[1]				
						Q67000-					
BSP 324	400	160	1,5 … 2,5	25	25	-S215	50[2]				
BSS 124	400	120	1,5 … 2,5	25	26b	-S614	100				
BSP 125	600	120	1,5 … 2,5	45	25	-S654	50[2]				
BSS 125	600	100	1,5 … 2,5	45	26b	-S505	100				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

[1], [2] siehe Seite 78/see Page 78

SIPMOS-Kleinsignal-Transistoren
SIPMOS Small-Signal Transistors

Typ Type	V_{DS} V	I_D mA	$V_{GS\ (th)}$ V	$R_{DS\ (on)}$ Ω	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
N-Kanal-Verarmungstypen N-Channel Depletion Types											
BSP 149	200	440	– 1,8 … – 0,7	3,5	25	Q67000- -S071	50[2]				
BSS 149	200	480	– 1,8 … – 0,7	3,5	26b	Q62702- -S623	100				
BSP 129	240	190	– 1,8 … – 0,7	20	25	Q67000- -S073	50[2]				
BSS 129	240	250	– 1,8 … – 0,7	20	26b	Q62702- -S510	500				
BSS 139	250	40	– 1,8 … – 0,7	100	23	-S612	100[1]				
BSS 229	250	70	– 1,8 … – 0,7	100	26b	-S567	200				
BSP 135	600	100	– 1,8 … – 0,7	60	25	-S655	50[2]				
BSS 135	600	100	– 1,8 … – 0,7	60	26b	-S601	100				
P-Kanal-Anreicherungstypen P-Channel Enhancement Types											
BSP 315	– 50	– 1100	– 2,0 … – 0,8	0,8	25	Q67000- -S075	50[2]				
BSS 84	– 50	– 130	– 0,8 … – 2,0	10	23	Q62702- -S568	50[1]				
BSS 110	– 50	– 170	– 0,8 … – 2,0	10	26a	-S489	200				
SP 06 10L	– 60	– 180	– 1,0 … – 2,0	10	26c	Q67000- -S065	200				
SP 06 10T	– 60	– 130	– 1,0 … – 2,0	10	23	-S088	200[1]				
▼ BSP 171	– 60	– 1700	– 2,0 … – 0,8	0,35	25	-S241	50				
BSP 316	– 100	– 650	– 2,0 … – 0,8	2,2	25	-S092	50[2]				
BSP 317	– 200	– 370	– 2,0 … – 0,8	6	25	-S094	50[2]				
BSP 92	– 240	– 200	– 2,0 … – 0,8	20	25	Q62702- -S653	50[2]				
BSS 92	– 240	– 150	– 0,8 … – 2,0	20	26b	-S458	100				
BSS 192	– 240	– 150	– 0,8 … – 2,0	20	24	-S634	100[2]				

= SMD (Surface Mounted Device)
Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

[1], [2] siehe Seite 78/see Page 78

SITAC-AC-Schalter
SITAC AC Switches

Typ Type	Opt.*)	V_{DRM} V	I_{TRMS} mA	I_{FT} mA	dv/dt crq kV/µs	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
Ohne Nullpunktschalter / Without zero voltage switch												
							C67079-					
BRT 11H	–	400	300	2	10	20	-A1000-A6	50				
▼ BRT 11H	1	400	300	2	10	20	-A1040-A5	50				
▼ BRT 11H	6	400	300	2	10	21	-A1040-A8	50				
▼ BRT 11H	7	400	300	2	10	22	-A1040-A11	50				
▼ BRT 11H	1+6	400	300	2	10	21	-A1040-A14	50				
▼ BRT 11H	1+7	400	300	2	10	22	-A1040-A17	50				
BRT 12H	–	600	300	2	10	20	-A1001-A6	50				
▼ BRT 12H	1	600	300	2	10	20	-A1041-A5	50				
▼ BRT 12H	6	600	300	2	10	21	-A1041-A8	50				
▼ BRT 12H	7	600	300	2	10	22	-A1041-A11	50				
▼ BRT 12H	1+6	600	300	2	10	21	-A1041-A14	50				
▼ BRT 12H	1+7	600	300	2	10	22	-A1041-A17	50				
BRT 13H	–	800	300	2	10	20	-A1002-A6	50				
▼ BRT 13H	1	800	300	2	10	20	-A1042-A5	50				
▼ BRT 13H	6	800	300	2	10	21	-A1042-A8	50				
▼ BRT 13H	7	800	300	2	10	22	-A1042-A11	50				
▼ BRT 13H	1+6	800	300	2	10	21	-A1042-A14	50				
▼ BRT 13H	1+7	800	300	2	10	22	-A1042-A17	50				
Mit Nullpunktschalter / With zero voltage switch												
							C67079-					
BRT 21H	–	400	300	2	10	20	-A1020-A6	50				
▼ BRT 21H	1	400	300	2	10	20	-A1050-A5	50				
▼ BRT 21H	6	400	300	2	10	21	-A1050-A8	50				
▼ BRT 21H	7	400	300	2	10	22	-A1050-A11	50				
▼ BRT 21H	1+6	400	300	2	10	21	-A1050-A16	50				
▼ BRT 21H	1+7	400	300	2	10	22	-A1050-A17	50				
BRT 22H	–	600	300	2	10	20	-A1021-A6	50				
▼ BRT 22H	1	600	300	2	10	20	-A1051-A5	50				
▼ BRT 22H	6	600	300	2	10	21	-A1051-A8	50				
▼ BRT 22H	7	600	300	2	10	22	-A1051-A11	50				
▼ BRT 22H	1+6	600	300	2	10	21	-A1051-A16	50				
▼ BRT 22H	1+7	600	300	2	10	22	-A1051-A17	50				
BRT 23H	–	800	300	2	10	20	-A1022-A6	50				
▼ BRT 23H	1	800	300	2	10	20	-A1052-A5	50				
▼ BRT 23H	6	800	300	2	10	21	-A1052-A8	50				
▼ BRT 23H	7	800	300	2	10	22	-A1052-A11	50				
▼ BRT 23H	1+6	800	300	2	10	21	-A1052-A14	50				
▼ BRT 23H	1+7	800	300	2	10	22	-A1052-A17	50				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

*) Lieferbar ab 1.06.93/Available June '93

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Smart SIPMOS-TEMPFET
Smart SIPMOS TEMPFET

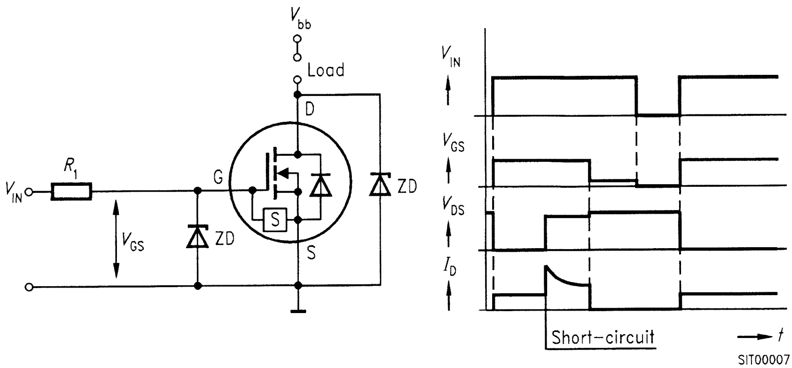
Typ Type	V_{DS} V	I_L-ISO[1] A	$R_{DS\,(on)}$ mΩ	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
P-Kanal-Anreicherungstyp P-Channel Enhancement Type										
					C67078-					
BTS 100	– 50	– 1,5	300	31a	-A5007-A2	50				
N-Kanal-Anreicherungstypen N-Channel Enhancement Types										
					C67078-					
▼ BTS 114A	50	3,8	100	31a	-A5000-A2	5				
■ BTS 114[2]	50	3,5	100	31a	-A5000-A3	50				
BTS 130	50	7,5	50	31a	-A5001-A3	50				
BTS 140A	50	13,5	28	31a	-S5011-A2	50				
BTS 240A	50	21	18	28a	-S5100-A3	50				
BTS 112A	60	2,5	150	31a	-S5014-A3	50				
BTS 129	60	7,5	50	31a	-A5013-A2	50				
BTS 110	100	1,75	200	31a	-A5008-A2	50				
BTS 120	100	3,5	100	31a	-A5009-A2	50				
N-Kanal-Anreicherungstypen (Logic Level) N-Channel Enhancement Types (Logic Level)										
					C67078-					
▼ BTS 115A	50	3,2	120	31a	-S5004-A2	50				
■ BTS 115[3]	50	3,0	125	31a	-A5004-A4	50				
BTS 131	50	6,5	60	31a	-A5002-A4	50				
BTS 113A	60	2,2	170	31a	-S5015-A3	50				
BTS 132	60	6,0	65	31a	-A5003-A4	50				
BTS 121A	100	3,5	100	31a	-S5010-A2	50				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

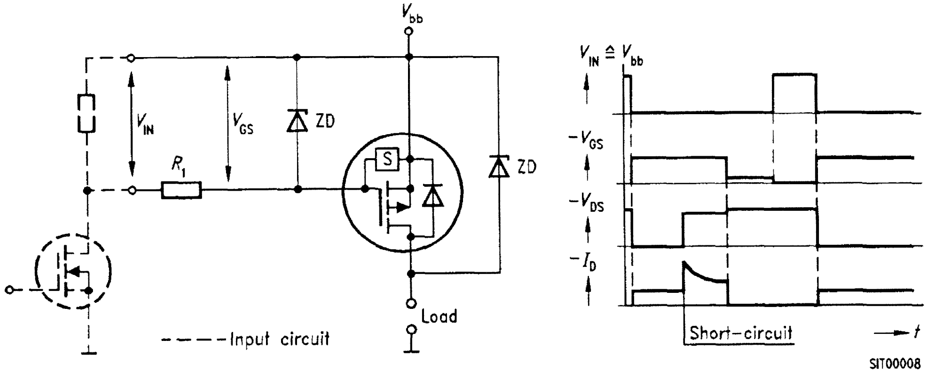
[1] ISO-Norm-Vorschlag: Spannungsabfall ≤ 0,5 V, T_C = 85 °C
Proposed ISO standard: voltage drop ≤ 0,5 V, T_C = 85 °C
[2] Ersatz/Replacement: BTS 114A
[3] Ersatz/Replacement: BTS 115A

Smart SIPMOS TEMPFET
Smart SIPMOS TEMPFET

Schaltung: N-Kanal
Circuit diagram: N channel



Schaltung: P-Kanal
Circuit diagram: P channel



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Smart SIPMOS PROFET
Smart SIPMOS PROFET

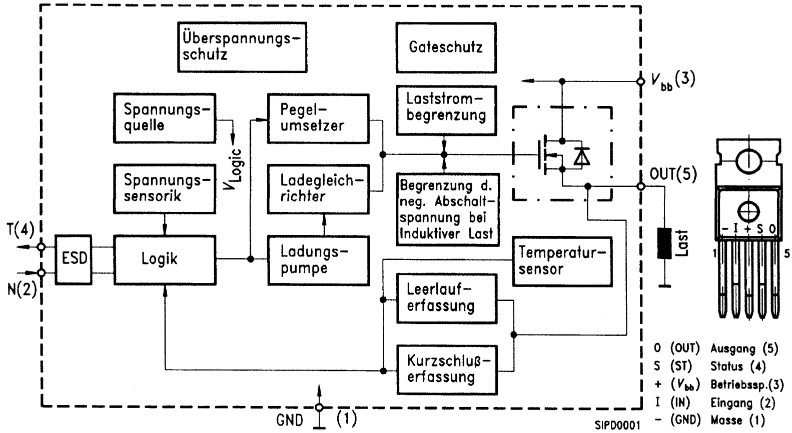
Typ Type	Version	$V_{bb\,(AZ)}$[3] V	I_L-ISO[1] A	R_{ON} mΩ	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
PROFET / PROFET mit niedriger interner Kurzschlußstrombegrenzung with internal current limit at low value											
						C67078-					
▼ BTS 302	–	> 50	1,4	250	39	-A5200-A3	50				
BTS 410F	F	> 50	1,6	220	32	-S5305-A5	50				
BTS 410G	G	> 50	1,6	220	32	-S5305-A6	50				
▼ BTS 410H	H	> 50	1,6	220	32	-S5305-A17	50				
BTS 432F	F	> 50	9,0	38	32	-S5303-A5	50				
PROFET / PROFET mit hoher interner Kurzschlußstrombegrenzung with internal current limit at high value											
						C67078-					
BTS 410D	D	> 50	1,6	220	32	-S5305-A3	50				
BTS 410E	E	> 50	1,6	220	32	-S5305-A4	50				
■ BTS 412A[2]	A	45	1,0	400	32	-A5300-A5	50				
BTS 412B	B	> 50	1,4	250	32	-S5300-A9	50				
■ BTS 413A[2]	C	45	1,0	400	32	-A5307-A2	50				
▼ BTS 426	–	> 40	5,9	60	32	-S5318-A2	50				
BTS 432D	D	> 50	9,0	38	32	-S5303-A3	50				
BTS 432E	E	> 50	9,0	38	32	-S5303-A4	50				
▼ BTS 432I1	I1	> 50	9,0	38	32	-S5308-A2	50				
▼ BTS 542D	D	> 50	17	20	29	-S5400-A3	25				
▼ BTS 542E	E	> 50	17	20	29	-S5400-A4	25				
Zwei-Kanal PROFET / Two channel PROFET mit hoher interner Kurzschlußstrombegrenzung with internal current limit at high value											
▼ BTS 611	–	> 40	2×1,8	2×200	33	-S5504-A2	50				
▼ BTS 612	–	> 40	2×1,8	2×200	33	-S5505-A2	50				
▼ BTS 621	–	> 40	2×3,5	2×100	33	-S5506-A2	50				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

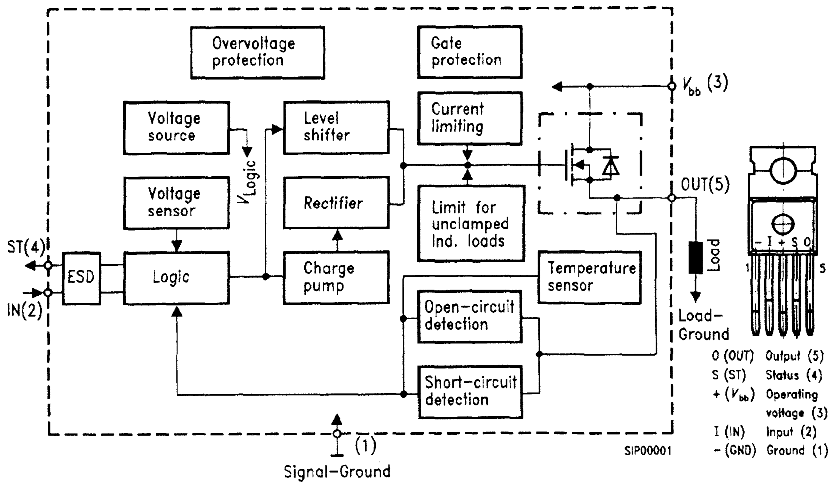
1) ISO-Norm-Vorschlag: Spannungsabfall ≤ 0,5 V, T_C = 85 °C
Proposed ISO standard: voltage drop ≤ 0,5 V, T_C = 85 °C
2) Ersatz/Replacement: BTS 412B
3) Load-Dump geschützt bis 93,5 V mit 150-Ω-Widerstand in Masseleitung
Load-Dump protection up to 93.5 V with 150 Ω resistor in ground connection

Smart SIPMOS PROFET
Smart SIPMOS PROFET

Blockschaltbild / Einkanal-PROFET

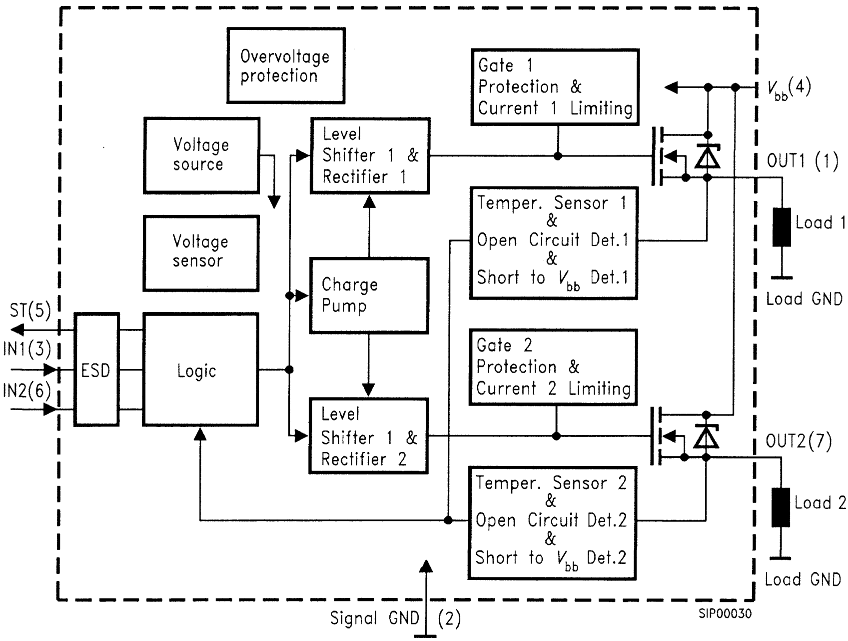


Block Diagram / One channel PROFET



Smart SIPMOS PROFET
Smart SIPMOS PROFET

Blockschaltbild / Block Diagram
Zwei-Kanal PROFET / Two channel PROFET



Smart SIPMOS-Dimmer
Smart SIPMOS Dimmer

Typ Type	$V_{bb\,(AZ)}$ 3) V	R_{ON} mΩ	I_L-ISO 1) A	I_L-MOS 2) A	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99	100 bis/to 499
						C67078-					
▼ BTS 629	> 50	180	2,0	(14)	33	-S5501-A2	50				
▼ BTS 629A	> 50	180	2,0	(14)	33	-S5501-A5	50				

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

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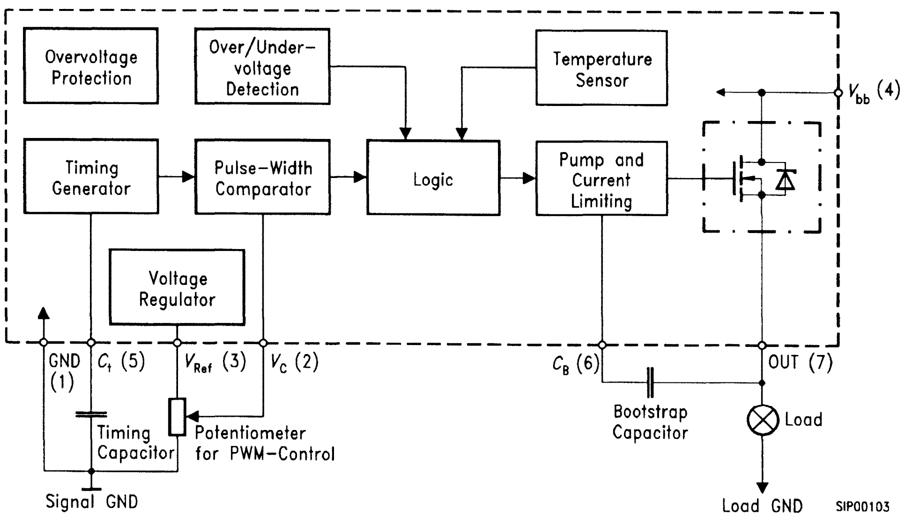
Block Diagram / Dimmer



() Theoretische Werte aufgrund der Normen
1) ISO-Norm-Vorschlag: Spannungsabfall ≤ 0,5 V; T_C = 85 °C
2) MOS-Norm: $T_C \triangleq$ wie im Datenblatt spezifiziert; T_J = 150 °C
3) Load-Dump geschützt bis 93,5 V; mit 150-Ω-Widerstand in Masseleitung

() Theoretical values only since current limit value is lower.
1) Proposed ISO standard: voltage drop ≤ 0,5 V; T_C = 85 °C
2) MOS standard: $T_C \triangleq$ datasheet specification; T_J = 150 °C
3) Load-Dump protection up to 93,5 V; with 150 Ω resistor in ground connection

SIMOPAC-MOS-Leistungsmodule
SIMOPAC MOS Power Modules

Typ Type	V_{DS} V	I_D A	P_{tot} W	$R_{DS(on)}$ mΩ	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99
Einzelschalter Single Switches										
						C67076-				
BSM 101AR[1]	50	200	700	3,0	34	-S1018-A2	10			
BSM 111AR[1]	100	200	700	8,5	34	-S1013-A2	10			
BSM 121AR[1]	200	130	700	20	34	-S1014-A2	10			
BSM 141	400	60	625	75	34	-A1010-A2	10			
BSM 151	500	48	625	120	34	-A1004-A2	10			
BSM 151F[2]	500	56	700	110	34	-A1050-A2	10			
BSM 181	800	36	700	240	34	-A1001-A2	10			
BSM 181R	800	36	700	240	34	-A1016-A2	10			
BSM 181F[2]	800	34	700	320	34	-A1052-A2	10			
BSM 191	1000	28	700	370	34	-A1009-A2	10			
BSM 191F[2]	1000	28	700	420	34	-A1053-A2	10			
Halbbrücken Half-Bridges										
						C67076-				
BSM 204A	50	2 × 200	400	4,5	35a	-S1102-A2	10			
BSM 214A	100	2 × 120	400	13	35a	-S1100-A2	10			
BSM 224A	200	2 × 80	400	30	35a	-S1101-A2	10			
BSM 244F[2]	400	2 × 45	400	100	35a	-A1155-A2	10			
BSM 254F[2]	500	2 × 35	400	170	35a	-A1150-A2	10			
BSM 284F[2]	800	2 × 20	400	480	35a	-A1152-A2	10			
BSM 294F[2]	1000	2 × 18	400	630	35a	-A1151-A2	10			

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

[1] R = Eingebauter Gate-Widerstand
R = Built-in gate resistor
[2] F = FREDFET

IGBT-Leistungsmodule
IGBT Power Modules

Typ Type	V_{CE} V	I_C T_C = 80 °C A	P_{tot} W	R_{thJC} K/W	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99
Einzelschalter Single Switches										
BSM 200GA 100 D	1000	200	1750	0,07	38	C67076- -A2001-A2	10			
BSM 300GA 100 D	1000	300	2500	0,05	38	-A2000-A2	10			
Halbbrücken Half-Bridges										
BSM 25GB 100 D	1000	2 × 25	300	0,40	35b	C67076- -A2101-A2	10			
BSM 50GB 100 D	1000	2 × 50	500	0,25	35b	-A2100-A2	10			
BSM 75GB 100 D	1000	2 × 75	625	0,20	35b	-A2104-A2	10			
BSM 100GB 100 D	1000	2 × 100	1000	0,13	37	-A2103-A2	10			
BSM 150GB 100 D	1000	2 × 150	1250	0,10	37	-A2102-A2	10			
3-Phasen-Vollbrücken 3-Phase Full-Bridges										
BSM 15GD 100 D	1000	6 × 15	125	1	36	C67076- -A2500-A2	10			
BSM 25GD 100 D	1000	6 × 25	300	0,4	36	-A2501-A2	10			
3-Phasen-Vollbrücken "ECONOPACK" 3-Phase Full-Bridges "ECONOPACK"										
▼ BSM 05GD 100 D N1	1000	6 × 5[1)]	30	4	40	C67076- -A2506-A2	10			
▼ BSM 10GD 100 D N1	1000	6 × 10[1)]	50	2,5	40	-A2507-A2	10			

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

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1) T_C = 40 °C

IGBT-Leistungsmodule
IGBT Power Modules

Typ Type	V_{CE} V	I_C T_C = 80 °C A	P_{tot} W	R_{thJC} K/W	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 49	50 bis/to 99
Einzelschalter Single Switches										
BSM 200GA 120 D	1200	200	1750	0,07	38	C67076- -A2006-A2	10			
BSM 300GA 120 D	1200	300	2500	0,05	38	-A2007-A2	10			
Halbbrücken Half-Bridges										
BSM 25GB 120 D	1200	2 × 25	300	0,40	35b	C67076- -A2109-A2	10			
BSM 50GB 120 D	1200	2 × 50	500	0,25	35b	-A2105-A2	10			
BSM 75GB 120 D	1200	2 × 75	625	0,20	35b	-A2106-A2	10			
BSM 100GB 120 D	1200	2 × 100	1000	0,13	37	-A2107-A2	10			
BSM 150GB 120 D	1200	2 × 150	1250	0,10	37	-A2108-A2	10			
3-Phasen-Vollbrücken 3-Phase Full-Bridges										
BSM 15GD 120 D	1200	6 × 15	125	1	36	C67076- -A2504-A2	10			
BSM 25GD 120 D	1200	6 × 25	300	0,4	36	-A2505-A2	10			

Gehäuse siehe Kapitel »Gehäusebauformen für SIPMOS-Halbleiter«
For the package refer to Chapter »Package Outlines for SIPMOS Semiconductors«

Optohalbleiter

Opto Semiconductors

8

Symbole und Begriffe
Symbols and Terms

Symbol	Bezeichnung	Designation
dv/dt	Spannungssteilheit	Rate of voltage rise
f	Trägerfrequenz	Carrier frequency
f_{CO}	Grenzfrequenz	Cut-off frequency
I_{CE}	Kollektor-Emitter-Strom	Collector-emitter current
I_C/I_F	Stromübertragungsverhältnis	Current transfer ratio
I_e[1]	Strahlstärke	Radiant intensity
I_F	Durchlaßstrom	Forward current
I_F	Segmentstrom	Current per segment
I_{FT}	Zündstrom	Ignition current
I_P	Fotostrom	Photo current
I_R	Sperrstrom	Reverse current
I_T	Laststrom	Running current
I_S	Stromaufnahme Detektor IC	Current input detector IC
I_V	Lichtstärke	Luminous intensity
S, S_λ	Fotoempfindlichkeit	Sensitivity
t_r/t_f	Anstiegszeit/Abfallzeit	Rise time/Fall time
t_{PHL}, t_{PLH}	Verzögerungszeit	Delay time
V_{CC}	Versorgungsspannung	Supply voltage
V_{CE}	Kollektor-Emitter-Spannung	Collector-emitter voltage
$V_{DRM/RRM}$	Spitzensperrspannung	Peak reverse voltage
V_F	Durchlaßspannung	Forward voltage
V_{IO}	Isolationsprüfspannung	Isolation test voltage
V_{IORM}	Max. Betriebsisolationsspannung	Max. operating isolation voltage
V_R	Sperrspannung	Reverse voltage
Δp	Druckbereich	Pressure range
φ	Linearer Drehwinkel	Linear angle of rotation
2φ	Öffnungskegel (Vollwinkel)	Viewing angle
Φ_{in}	Eingekoppelte Lichtleistung	Coupled-in radiant power
Φ_{opt}	Optische Leistung	Optical output
Φ_V	Lichtstrom	Luminous flux
λ	Wellenlänge	Wavelength
λ_{peak}	Wellenlänge des emittierten Lichts (Strahlung bei I_{max})	Wavelength at peak emission Radiation at I_{max})
λ_{Smax}	Wellenlänge d. max. Fotoempfind.	Wavelength of max. sensitivity

1) Gemessen mit HP Radiant Flux Meter 8334 A (Option 013), (Meßabstand ≥ 70 mm)
Measured with HP radiant flux meter 8334 A (option 013, measuring distance ≥ 70 mm)
t_p = 20 ms; I_F = 100 mA
Alle Angaben zur Fotoempfindlichkeit beziehen sich auf die ungefilterte Strahlung einer Wolfram-Fadenlampe mit einer Farbtemperatur von 2856 K (Normlicht nach DIN 5033 und IEC 306-1)
The spectral sensitivity indicated refers to unfiltered radiation of a tungsten filament lamp at a color temperature of 2856 K (standard light in acc. with DIN 5033 and IEC 306-1)

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
3 mm; klar; lang; Vollwinkel: 50 Grad (2φ) **3 mm; clear; long; Viewing Angle: 50 Degrees** (2φ)							
▼ LS 3340-KN	super-red	6.3 … 50	50	Q62703-Q1701	1000		
LS 3340-M	super-red	16 … 32	50	Q62703-Q1704	1000		
▼ LS 3340-N	super-red	25 … 50	50	Q62703-Q2320	1000		
▼ LS 3340-MP	super-red	6 … 80	50	Q62703-Q1703	1000		
▼ LO 3340-KN	orange	6.3 … 50	50	Q62703-Q1886	1000		
▼ LO 3340-M	orange	16 … 32	50	Q62703-Q2255	1000		
▼ LO 3340-N	orange	25 … 50	50	Q62703-Q2473	1000		
▼ LO 3340-MP	orange	16 … 80	50	Q62703-Q2628	1000		
▼ LY 3340-JM	yellow	4 … 32	50	Q62703-Q1789	1000		
▼ LY 3340-M	yellow	16 … 32	50	Q62703-Q1999	1000		
LY 3340-L	yellow	10 … 20	50	Q62703-Q1791	1000		
▼ LY 3340-LP	yellow	10 … 80	50	Q62703-Q1792	1000		
LG 3330-KN	green	6.3 … 50	50	Q62703-Q1698	1000		
▼ LG 3330-L	green	10 … 20	50	Q62703-Q1699	1000		
LG 3330-M	green	16 … 32	50	Q62703-Q1700	1000		
▼ LG 3330-N	green	25 … 50	50	Q62703-Q2010	1000		
LG 3330-LP	green	10 … 80	50	Q62703-Q2011	1000		
3 mm; klar; lang; Vollwinkel: 40 Grad (2φ) **3 mm; clear; long; Viewing Angle: 40 Degrees** (2φ)							
LS 3341-KN	super-red	6.3 … 50	51	Q62703-Q2145	1000		
▼ LS 3341-M	super-red	16 … 32	51	Q62703-Q2146	1000		
▼ LS 3341-N	super-red	25 … 50	51	Q62703-Q2147	1000		
LS 3341-MQ	super-red	16 … 125	51	Q62703-Q2148	1000		
LY 3341-JM	yellow	4 … 32	51	Q62703-Q2149	1000		
▼ LY 3341-L	yellow	10 … 20	51	Q62703-Q2150	1000		
▼ LY 3341-M	yellow	16 … 32	51	Q62703-Q2151	1000		
LY 3341-LP	yellow	10 … 80	51	Q62703-Q2152	1000		
LG 3341-JM	green	4 … 32	51	Q62703-Q2153	1000		
▼ LG 3341-L	green	10 … 20	51	Q62703-Q2154	1000		
▼ LG 3341-M	green	16 … 32	51	Q62703-Q2155	1000		
LG 3341-LP	green	10 … 80	51	Q62703-Q2156	1000		

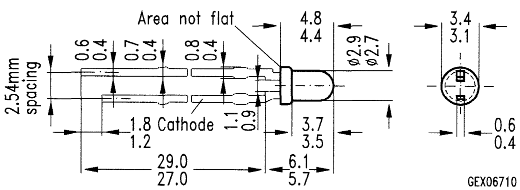
Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
3 mm; diffus; lang; Vollwinkel: 70 Grad (2φ) **3 mm; diffused; long; Viewing Angle: 70 Degrees** (2φ)							
LR 3360-DG	red	0.4 … 3.2	50	Q62703-Q1316	1000		
LR 3360-F	red	1 … 2	50	Q62703-Q1317	1000		
▼ LR 3360-G	red	1.6 … 3.2	50	Q62703-Q1318	1000		
LR 3360-FJ	red	1 … 8	50	Q62703-Q1319	1000		
LS 3360-HL	super-red	2.5 … 20	50	Q62703-Q1320	1000		
▼ LS 3360-J	super-red	4 … 8	50	Q62703-Q1736	1000		
LS 3360-K	super-red	6.3 … 12.5	50	Q62703-Q1321	1000		
LS 3360-KN	super-red	6.3 … 50	50	Q62703-Q1323	1000		
LO 3360-HL	orange	2.5 … 20	50	Q62703-Q1887	1000		
▼ LO 3360-J	orange	4 … 8	50	Q62703-Q2399	1000		
▼ LO 3360-K	orange	6.3 … 12.5	50	Q62703-Q2400	1000		
▼ LO 3360-JM	orange	4 … 32	50	Q62703-Q2410	1000		
LY 3360-HL	yellow	2.5 … 20	50	Q62703-Q1324	1000		
LY 3360-K	yellow	6.3 … 12.5	50	Q62703-Q1325	1000		
▼ LY 3360-J	yellow	4 … 8	50	Q62703-Q1737	1000		
LY 3360-JM	yellow	4 … 32	50	Q62703-Q1998	1000		
LG 3360-GK	green	1.6 … 12.5	50	Q62703-Q1331	1000		
LG 3360-K	green	6.3 … 12.5	50	Q62703-Q2008	1000		
▼ LG 3360-J	green	4 … 8	50	Q62703-Q1865	1000		
LG 3360-JM	green	4 … 32	50	Q62703-Q2009	1000		
▼ LP 3360-GK	pure green	1.6 … 12.5	50	Q62703-Q2467	1000		

Lumineszenzdioden (LEDs)
LEDs

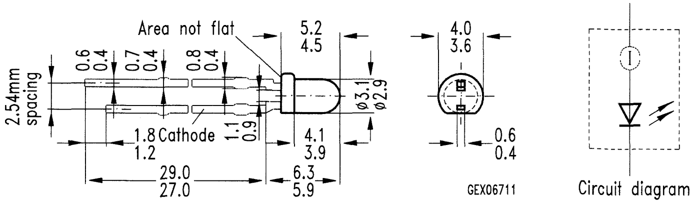
Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
3 mm; diffus; lang; Vollwinkel: 100 Grad (2φ) **3 mm; diffused; long; Viewing Angle: 100 Degrees** (2φ)							
▼ LS 3380-FJ	super-red	1 … 8	50	Q62703-Q2629	1000		
▼ LS 3380-H	super-red	2.5 … 5	50	Q62703-Q1726	1000		
LS 3380-J	super-red	4 … 8	50	Q62703-Q1349	1000		
▼ LS 3380-HL	super-red	2.5 … 20	50	Q62703-Q2630	1000		
LY 3380-FJ	yellow	1 … 8	50	Q62703-Q1352	1000		
▼ LY 3380-H	yellow	2.5 … 5	50	Q62703-Q1353	1000		
LY 3380-J	yellow	4 … 8	50	Q62703-Q1354	1000		
▼ LY 3380-K	yellow	6.3 … 12.5	50	Q62703-Q2317	1000		
LY 3380-HL	yellow	2.5 … 20	50	Q62703-Q1355	1000		
▼ LG 3380-GK	green	1.6 … 12.5	50	Q62703-Q1356	1000		
▼ LG 3380-H	green	2.5 … 5	50	Q62703-Q1358	1000		
LG 3380-J	green	4 … 8	50	Q62703-Q2318	1000		
▼ LG 3380-K	green	6.3 … 12.5	50	Q62703-Q2631	1000		
LG 3380-HL	green	2.5 … 20	50	Q62703-Q1359	1000		

L *3330, L *3340, L *3360, L *3380 **Bild/Figure 50**



Approx. weight 0.15 g

L *3341 **Bild/Figure 51**



Approx. weight 0.15 g

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_v (I_F = 15 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
ARGUS® LEDs, 3 mm; klar; lang							
ARGUS® LEDs, 3 mm; clear; long							
▼ LS K380-NR	super-red	25 … 200	52	Q62703-Q2223	1000		
▼ LS K380-N	super-red	25 … 50	52	Q62703-Q0760	1000		
LS K380-P	super-red	40 … 80	52	Q62703-Q1003	1000		
LS K380-LP	super-red	10 … 80	52	Q62703-Q1768	1000		
LO K380-LP	orange	10 … 80	52	Q62703-Q1888	1000		
▼ LO K380-N	orange	25 … 50	52	Q62703-Q2227	1000		
LO K380-P	orange	40 … 80	52	Q62703-Q2228	1000		
▼ LO K380-NR	orange	25 … 200	52	Q62703-Q2201	1000		
LY K380-LP	yellow	10 … 80	52	Q62703-Q1769	1000		
LY K380-N	yellow	25 … 50	52	Q62703-Q0575	1000		
▼ LY K380-P	yellow	40 … 80	52	Q62703-Q0576	1000		
▼ LY K380-NR	yellow	25 … 200	52	Q62703-Q2224	1000		
LG K380-LP	green	10 … 80	52	Q62703-Q1770	1000		
▼ LG K380-N	green	25 … 50	52	Q62703-Q0759	1000		
LG K380-P	green	40 … 80	52	Q62703-Q1034	1000		
▼ LG K380-NR	green	25 … 200	52	Q62703-Q2225	1000		
▼ LP K380-KO	pure green	10 (63)	52	Q62703-Q2506	1000		

Typ Type	Farbe Colour	I_v (I_F = 50 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Super-ARGUS® LEDs, 3 mm; klar; lang							
Super-ARGUS® LEDs, 3 mm; clear; long							
▼ LS K382-QT	super-red	63 … 500	52	Q62703-Q2633	500		
▼ LS K382-R	super-red	100 … 200	52	Q62703-Q2634	500		
▼ LS K382-S	super-red	160 … 320	52	Q62703-Q2635	500		
▼ LS K382-RU	super-red	100 … 800	52	Q62703-Q1956	500		
▼ LO K382-QT	orange	63 … 500	52	Q62703-Q2636	500		
▼ LO K382-R	orange	100 … 200	52	Q62703-Q2637	500		
▼ LO K382-S	orange	160 … 320	52	Q62703-Q2638	500		
▼ LO K382-RU	orange	100 … 800	52	Q62703-Q1957	500		
▼ LY K382-QT	yellow	63 … 500	52	Q62703-Q2639	500		
▼ LY K382-R	yellow	100 … 200	52	Q62703-Q2640	500		
▼ LY K382-S	yellow	160 … 320	52	Q62703-Q2641	500		
▼ LY K382-RU	yellow	100 … 80	52	Q62703-Q1958	500		

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 50 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Super-ARGUS® LEDs, 3 mm; klar; lang Super-ARGUS® LEDs, 3 mm; clear; long							
▼ LG K382-QT	green	63 ... 500	52	Q62703-Q2642	500		
▼ LG K382-R	green	100 ... 200	52	Q62703-Q2643	500		
▼ LG K382-S	green	160 ... 320	52	Q62703-Q2644	500		
▼ LG K382-T	green	250 ... 500	52	Q62703-Q2645	500		
▼ LG K382-RU	green	100 ... 800	52	Q62703-Q1959	500		
▼ LP K382- NR	pure green	25 ... 200	52	Q62703-Q2646	500		
▼ LP K382-P	pure green	40 ... 80	52	Q62703-Q2339	500		
▼ LP K382-Q	pure green	63 ... 125	52	Q62703-Q2338	500		
▼ LP K382-R	pure green	100 ... 200	52	Q62703-Q2337	500		
▼ LP K382-PS	pure green	40 ... 320	52	Q62703-Q2123	500		

Typ Type	Farbe Colour	I_V (I_F = 2 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Niedrigstrom-ARGUS® LEDs, 3 mm; klar; lang Low-Current ARGUS® LEDs, 3 mm; clear; long							
LS K389-FO	super-red	5 (≥ 1)	52	Q62703-Q1771	1000		
LY K389-FO	yellow	3.2 (≥ 1)	52	Q62703-Q1772	1000		
LG K389-FO	green	3.2 (≥ 1)	52	Q62703-Q1773	1000		

Typ Type	Farbe Colour	I_V (I_F = 15 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
3-mm-plan LEDs; klar; kurz 3-mm-plan LEDs; clear; short							
▼ LS P380-MO	super-red	50 (≥ 16)	52A	Q62703-Q2466	1000		
▼ LO P380-MO	orange	50 (≥ 16)	52A	Q62703-Q2465	1000		
▼ LY P380-MO	yellow	50 (≥ 16)	52A	Q62703-Q2434	1000		
▼ LG P380-MO	green	50 (≥ 16)	52A	Q62703-Q2463	1000		
▼ LP P380-LO	pure green	20 (≥ 6.3)	52A	Q62703-Q2464	1000		

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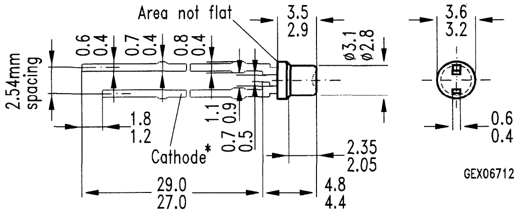
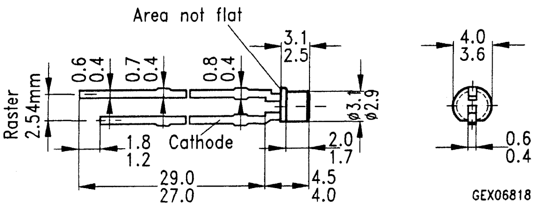
L* K380, L* K382, L* K389 **Bild/Figure 52**



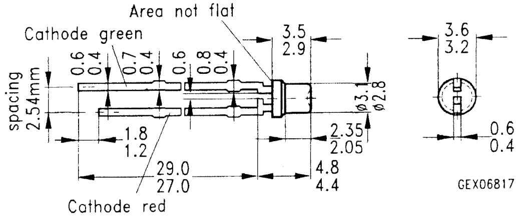
*Cathode of the chip with the longer wavelength

Approx weight 0.2 g

L* P380 **Bild/Figure 52A**



L* K370, L* K372 **Bild/Figure 53**



Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_v (I_F = 15 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
ARGUS®-MULTILED®, 3 mm; lang ARGUS®-MULTILED®, 3 mm; long							
LSG K370-LP	super-red/ green	25 (≥ 10)	53	Q62703-Q2298	1000		
LSP K370-KN	super-red/ pure green	10 (≥ 6.3)	53	Q62703-Q2379	1000		
▼ LOP K370-KN	orange/ pure green	20 (≥ 6.3)	53	Q62703-Q2529	1000		

Typ Type	Farbe Colour	I_v (I_F = 50 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Super-ARGUS®-MULTILED®, 3 mm; lang Super-ARGUS®-MULTILED®, 3 mm; long							
LSP K372-PO	super-red/ pure green	80 (≥ 40)	53	Q62703-Q2380	500		
▼ LSG K372-QO	super-red/ green	100 (≥ 63)	53	Q62703-Q2647	500		

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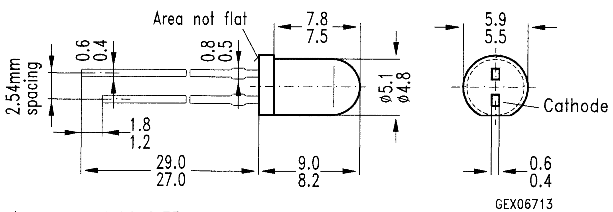
Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
5 mm; klar; lang; Vollwinkel: 24 Grad (2φ) **5 mm; clear; long; Viewing Angle: 24 Degrees** (2φ)							
▼ LS 5420-MQ	super-red	16 … 125	54	Q62703-Q1428	1000		
LS 5420-P	super-red	40 … 80	54	Q62703-Q1430	1000		
▼ LS 5420-Q	super-red	63 … 125	54	Q62703-Q1993	1000		
▼ LS 5420-R	super-red	100 … 200	54	Q62703-Q1429	1000		
▼ LS 5420-PS	super-red	40 … 320	54	Q62703-Q1431	1000		
▼ LY 5420-MQ	yellow	16 … 125	54	Q62703-Q1432	1000		
LY 5420-P	yellow	40 … 80	54	Q62703-Q1434	1000		
▼ LY 5420-Q	yellow	63 … 125	54	Q62703-Q2004	1000		
▼ LY 5420-PS	yellow	40 … 320	54	Q62703-Q1435	1000		
LG 5410-MQ	green	16 … 125	54	Q62703-Q1439	1000		
▼ LG 5410-P	green	40 … 80	54	Q62703-Q1868	1000		
LG 5410-Q	green	63 … 125	54	Q62703-Q2020	1000		
▼ LG 5410-R	green	100 … 200	54	Q62703-Q2021	1000		
LG 5410-PS	green	40 … 320	54	Q62703-Q2022	1000		

L* 5410, L* 5420 **Bild/Figure 54**

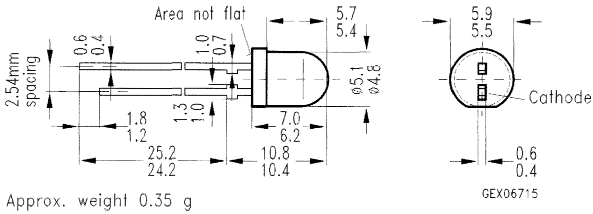


Approx. weight 0.35 g

Lumineszenzdioden (LEDs)
LEDs

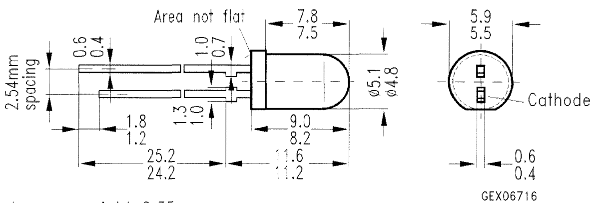
Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Weitwinkel LEDs 5 mm; diffus; lang; Vollwinkel: 140 Grad (2φ) **Wide Angle LEDs 5 mm; diffused; long; Viewing Angle: 140 Degrees** (2φ)							
LS 5380-FJ	super-red	1 … 8	55	Q62703-Q1452	1000		
LS 5380-H	super-red	2.5 … 5	55	Q62703-Q1453	1000		
LS 5380-J	super-red	4 … 8	55	Q62703-Q1454	1000		
LS 5380-HL	super-red	2.5 … 20	55	Q62703-Q1455	1000		
▼ LY 5380-FJ	yellow	1 … 8	55	Q62703-Q2002	1000		
LY 5380-H	yellow	2.5 … 5	55	Q62703-Q1457	1000		
▼ LY 5380-J	yellow	4 … 8	55	Q62703-Q2319	1000		
▼ LY 5380-HL	yellow	2.5 … 20	55	Q62703-Q2003	1000		
LG 5380-FJ	green	1 … 8	55	Q62703-Q1463	1000		
LG 5380-H	green	2.5 … 5	55	Q62703-Q2032	1000		
▼ LG 5380-J	green	4 … 8	55	Q62703-Q2016	1000		
LG 5380-HL	green	2.5 … 20	55	Q62703-Q2017	1000		
5 mm; diffus; lang; Vollwinkel: 50 Grad (2φ) **5 mm; diffused; long; Viewing Angle: 50 Degrees** (2φ)							
LR 5360-DG	red	0.4 … 3.2	56	Q62703-Q1376	1000		
LR 5360-F	red	1 … 2	56	Q62703-Q1377	1000		
▼ LR 5360-G	red	1.6 … 3.2	56	Q62703-Q1378	1000		
LR 5360-FJ	red	1 … 8	56	Q62703-Q1379	1000		
LS 5360-HL	super-red	2.5 … 20	56	Q62703-Q1380	1000		
▼ LS 5360-J	super-red	4 … 8	56	Q62703-Q1744	1000		
LS 5360-K	super-red	6.3 … 12.5	56	Q62703-Q1381	1000		
▼ LS 5360-L	super-red	10 … 20	56	Q62703-Q1382	1000		
LS 5360-KN	super-red	6.3 … 50	56	Q62703-Q1383	1000		
▼ LY 5360-HL	yellow	2.5 … 20	56	Q62703-Q2000	1000		
▼ LY 5360-J	yellow	4 … 8	56	Q62703-Q1386	1000		
▼ LY 5360-K	yellow	6.3 …12.5	56	Q62703-Q2001	1000		
▼ LY 5360-L	yellow	10 … 20	56	Q62703-Q2404	1000		
▼ LY 5360-JM	yellow	4 … 32	56	Q62703-Q1387	1000		
LG 5360-GK	green	1.6 … 12.5	56	Q62703-Q1391	1000		
▼ LG 5360-H	green	2.5 … 5	56	Q62703-Q1390	1000		
LG 5360-J	green	4 … 8	56	Q62703-Q1866	1000		
▼ LG 5360-K	green	6.3 …12.5	56	Q62703-Q2012	1000		
LG 5360-JM	green	4 … 32	56	Q62703-Q2013	1000		

L* 5380 **Bild/Figure 55**



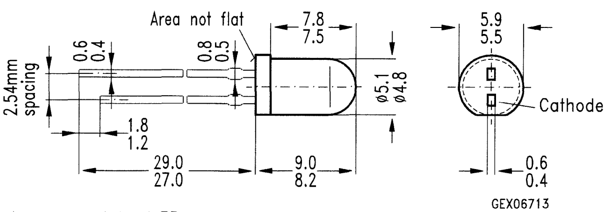
Approx. weight 0.35 g

L* 5360 **Bild/Figure 56**



Approx. weight 0.35 g

L* 5460, L* 5421, LG 5411 **Bild/Figure 57**



Approx. weight 0.35 g

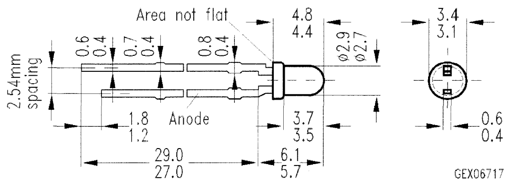
Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
5 mm; diffus; lang; Vollwinkel: 50 Grad (2φ) **5 mm; diffused; long; Viewing Angle: 50 Degrees** (2φ)							
LR 5460-DG	red	0.40 … 3.2	57	Q62703-Q1392	1000		
LR 5460-F	red	1 … 2	57	Q62703-Q1393	1000		
▼ LR 5460-G	red	1.6 … 3.2	57	Q62703-Q1394	1000		
LR 5460-FJ	red	1 … 8	57	Q62703-Q1395	1000		
LS 5460-HL	super-red	2.5 … 20	57	Q62703-Q1396	1000		
▼ LS 5460-J	super-red	4 … 8	57	Q62703-Q1746	1000		
LS 5460-K	super-red	6.3 … 12.5	57	Q62703-Q1397	1000		
▼ LS 5460-L	super-red	10 … 20	57	Q62703-Q1398	1000		
LS 5460-KN	super-red	6.3 … 50	57	Q62703-Q1399	1000		
▼ LY 5460-HL	yellow	2.5 … 20	57	Q62703-Q1400	1000		
▼ LY 5460-J	yellow	4 … 8	57	Q62703-Q1401	1000		
▼ LY 5460-L	yellow	10 … 20	57	Q62703-Q2403	1000		
LY 5460-K	yellow	6.3 … 12.5	57	Q62703-Q1402	1000		
LY 5460-JM	yellow	4 … 32	57	Q62703-Q1403	1000		
LG 5460-GK	green	1.6 … 12.5	57	Q62703-Q1407	1000		
▼ LG 5460-H	green	2.5 … 5	57	Q62703-Q1406	1000		
LG 5460-J	green	4 … 8	57	Q62703-Q1867	1000		
▼ LG 5460-K	green	6.3 … 12.5	57	Q62703-Q2014	1000		
LG 5460-JM	green	4 … 32	57	Q62703-Q2015	1000		
Superhelle LEDs; 5 mm; klar; lang; Vollwinkel: 20 Grad (2φ) **Super Bright LEDs; 5 mm; clear; long; Viewing Angle: 20 Degrees** (2φ)							
LS 5421-NR	super-red	25 … 200	57	Q62703-Q1994	1000		
LS 5421-Q	super-red	63 … 125	57	Q62703-Q1442	1000		
▼ LS 5421-R	super-red	100 … 200	57	Q62703-Q1738	1000		
LS 5421-QT	super-red	63 … 500	57	Q62703-Q1995	1000		
▼ LY 5421-NR	yellow	25 … 200	57	Q62703-Q1444	1000		
▼ LY 5421-Q	yellow	63 … 125	57	Q62703-Q1446	1000		
LY 5421-R	yellow	100 … 200	57	Q62703-Q2005	1000		
▼ LY 5421-S	yellow	160 … 320	57	Q62703-Q2632	1000		
▼ LY 5421-QT	yellow	63 … 500	57	Q62703-Q1447	1000		
▼ LG 5411-NR	green	25 … 200	57	Q62703-Q2023	1000		
LG 5411-Q	green	63 … 125	57	Q62703-Q1739	1000		
▼ LG 5411-R	green	100 … 200	57	Q62703-Q1451	1000		
▼ LG 5411-S	green	160 … 320	57	Q62703-Q2321	1000		
▼ LG 5411-QT	green	63 … 500	57	Q62703-Q2024	1000		

Lumineszenzdioden (LEDs)
LEDs

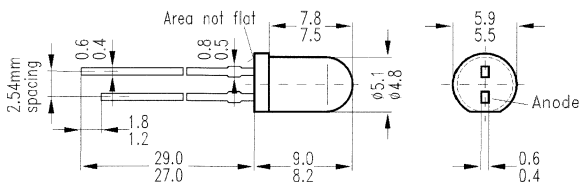
Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Hyperrote GaAlAs-LEDs; 3 mm; rot klar; lang; Vollwinkel: 25 Grad (2φ) **Hyperred GaAlAs-LEDs; 3 mm; red clear; long; Viewing Angle: 25 Degrees** (2φ)							
LH 3344-QO	hyperred	150 (≥ 63)	58	Q62703-Q2231	1000		
Hyperrote GaAlAs-LEDs; 3 mm; rot diffus; lang; Vollwinkel: 45 Grad (2φ) **Hyperred GaAlAs-LEDs; 3 mm; red diffused; long; Viewing Angle: 45 Degrees** (2φ)							
▼ LH 3364-MO	hyperred	40 (≥ 16)	58	Q62703-Q2233	1000		
Hyperrote GaAlAs-LEDs; 5 mm; rot klar; lang; Vollwinkel: 16 Grad (2φ) **Hyperred GaAlAs-LEDs; 5 mm; red clear; long; Viewing Angle: 16 Degrees** (2φ)							
LH 5424-QO	hyperred	320 (≥ 63)	59	Q62703-Q2242	1000		
Hyperrote GaAlAs-LEDs; 5 mm; rot diffus; lang; Vollwinkel: 35 Grad (2φ) **Hyperred GaAlAs-LEDs; 5 mm; red diffused; long; Viewing Angle: 35 Degrees** (2φ)							
LH 5464-LO	hyperred	60 (≥ 10)	59	Q62703-Q2244	1000		

LH 3343, LH 3344, LH 3363, LH 3364 **Bild/Figure 58**



Approx. weight 0.15 g

LH 5443, LH 5444, LH 5463, LH 5464 **Bild/Figure 59**



Approx. weight 0.35 g

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Weitwinkel LEDs; 5 mm; diffus; lang; Vollwinkel; 80 Grad (2φ) **Wide Angle LEDs; 5 mm; diffused; long; Viewing Angle: 80 Degrees** (2φ)							
LR 5480-CF	red	0.25 … 2	60	Q62703-Q1986	1000		
▼ LR 5480-E	red	0.63 … 1.25	60	Q62703-Q1734	1000		
LR 5480-F	red	1 … 2	60	Q62703-Q1987	1000		
LR 5480-DG	red	0.4 … 3.2	60	Q62703-Q1408	1000		
LS 5480-GK	super-red	1.6 … 12.5	60	Q62703-Q1989	1000		
▼ LS 5480-J	super-red	4 … 8	60	Q62703-Q1414	1000		
LS 5480-K	super-red	6.3 … 12.5	60	Q62703-Q1990	1000		
LS 5480-JM	super-red	4 … 32	60	Q62703-Q1992	1000		
▼ LY 5480-GK	yellow	1.6 … 12.5	60	Q62703-Q1416	1000		
LY 5480-K	yellow	6.3 … 12.5	60	Q62703-Q1418	1000		
LY 5480-L	yellow	10 … 20	60	Q62703-Q2402	1000		
LY 5480-JM	yellow	4 … 32	60	Q62703-Q1419	1000		
▼ LG 5480-GK	green	1.6 … 12.5	60	Q62703-Q1423	1000		
▼ LG 5480-H	green	2.5 … 5	60	Q62703-Q1422	1000		
LG 5480-J	green	4 … 8	60	Q62703-Q1869	1000		
▼ LG 5480-K	green	6.3 … 12.5	60	Q62703-Q2018	1000		
▼ LG 5480-JM	green	4 … 32	60	Q62703-Q2019	1000		

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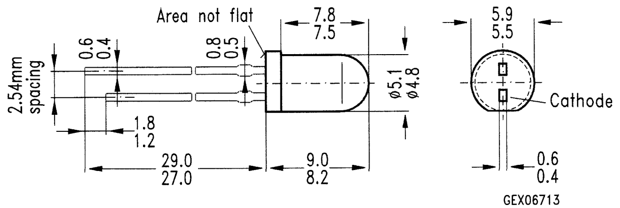
L *5480 **Bild/Figure 60**



Approx. weight 0.35 g

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Symbol-LEDs; 5 mm; rechteckig; teildiffus; lang; Vollwinkel: 100 Grad (2φ) **Symbol LEDs; 5 mm; rectangular; part. diffused; long; Viewing Angle: 100 Degrees** (2φ)							
LR B480-BD	red	0.16 … 0.8	61	Q62703-Q1464	1000		
LR B480-C	red	0.25 … 0.5	61	Q62703-Q1465	1000		
▼ LR B480-D	red	0.4 … 0.8	61	Q62703-Q2648	1000		
LS B480-EH	super-red	0.63 … 5	61	Q62703-Q1466	1000		
▼ LS B480-G	super-red	1.6 … 3.2	61	Q62703-Q1467	1000		
LS B480-H	super-red	2.5 … 5	61	Q62703-Q1468	1000		
LS B480-GK	super-red	1.6 … 12.5	61	Q62703-Q1469	1000		
LY B480-EH	yellow	0.63 … 5	61	Q62703-Q1470	1000		
LY B480-H	yellow	2.5 … 5	61	Q62703-Q2006	1000		
LY B480-GK	yellow	1.6 … 12.5	61	Q62703-Q2007	1000		
LG B480-EH	green	0.63 … 5	61	Q62703-Q1477	1000		
LG B480-G	green	1.6 … 3.2	61	Q62703-Q1870	1000		
▼ LG B480-H	green	2.5 … 5	61	Q62703-Q2025	1000		
LG B480-GK	green	1.6 … 12.5	61	Q62703-Q2026	1000		
Symbol-LEDs; 5 mm; rund; teildiffus; lang; Vollwinkel: 100 Grad (2φ) **Symbol LEDs; 5 mm; round; part. diffused; long; Viewing Angle: 100 Degrees** (2φ)							
▼ LR H380-BD	red	0.16 … 0.8	62A	Q62703-Q1478	1000		
▼ LR H380-C	red	0.25 … 0.5	62A	Q62703-Q1479	1000		
▼ LR H380-D	red	0.40 … 0.8	62A	Q62703-Q1988	1000		
▼ LS H380-EH	super-red	0.63 … 5	62A	Q62703-Q1480	1000		
▼ LS H380-G	super-red	1.6 … 3.2	62A	Q62703-Q1481	1000		
▼ LS H380-H	super-red	2.5 … 5	62A	Q62703-Q1482	1000		
▼ LS H380-GK	super-red	1.6 … 12.5	62A	Q62703-Q1483	1000		
▼ LY H380-EH	yellow	0.63 … 5	62A	Q62703-Q1484	1000		
▼ LY H380-G	yellow	1.6 … 3.2	62A	Q62703-Q1485	1000		
▼ LY H380-H	yellow	2.5 … 5	62A	Q62703-Q1486	1000		
▼ LY H380-GK	yellow	1.6 … 12.5	62A	Q62703-Q1487	1000		
▼ LG H380-EH	green	0.63 … 5	62A	Q62703-Q1491	1000		
▼ LG H380-G	green	1.6 … 3.2	62A	Q62703-Q1871	1000		
▼ LG H380-H	green	2.5 … 5	62A	Q62703-Q1872	1000		
▼ LG H380-GK	green	1.6 … 12.5	62A	Q62703-Q2027	1000		

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
MULTILED®; 5 mm; rund; teildiffus; lang; Vollwinkel: 50 Grad (2φ) **MULTILED®; 5 mm; round; part. diffused; long; Viewing Angle: 50 Degrees** (2φ)							
▼ LU 5351-GL	super-red/ green	1.6 … 20	62	Q62703-Q2046	1000		
LU 5351-JM	super-red/ green	4 … 32	62	Q62703-Q2047	500		
MULTILED®; 5 mm; rechteckig; teildiffus; lang; Vollwinkel: 100 Grad (2φ) **MULTILED®; 5 mm; rectangular; part. diffused; long; Viewing Angle: 100 Degrees** (2φ)							
LU B371-GK	super-red/ green	1.6 … 12.5	63	Q62703-Q2049	500		
▼ LU B371-FJ	super-red/ green	1 … 8	63	Q62703-Q2048	1000		

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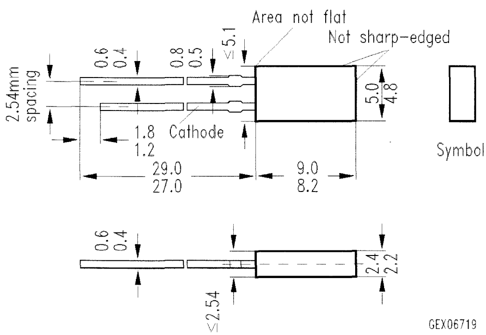
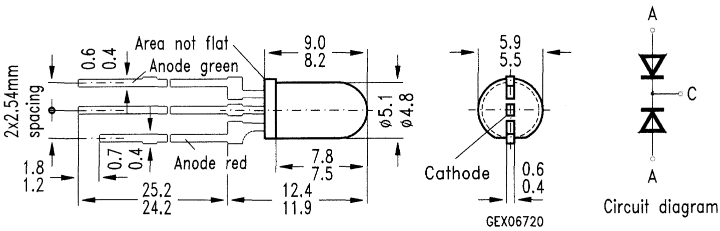
L* B480 **Bild/Figure 61**



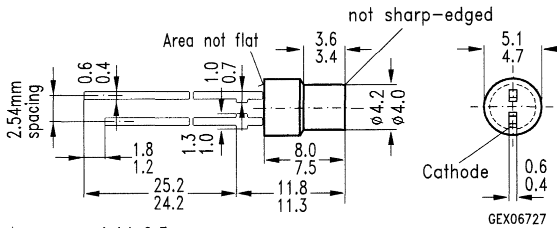
Approx. weight 0.25 g

LU 5351 **Bild/Figure 62**



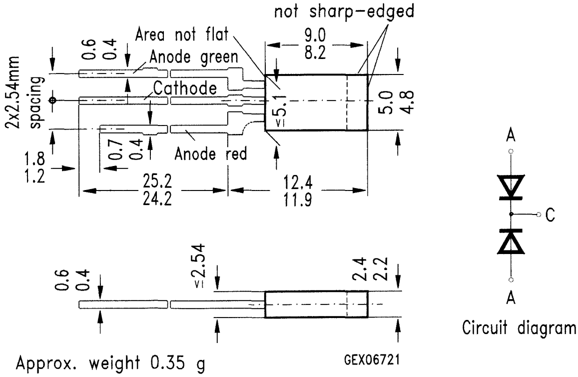
Approx. weight 0.4 g

L* H380 **Bild/Figure 62A**



Approx. weight 0.3 g

LU B371 **Bild/Figure 63**



Approx. weight 0.35 g

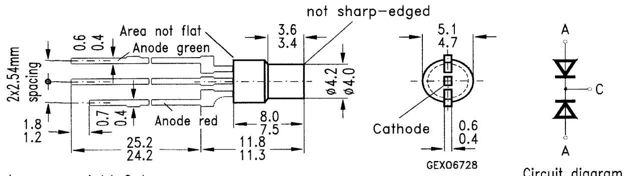
Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
MULTILED®; 5 mm; rund; teildiffus; lang; Vollwinkel: 100 Grad (2φ) **MULTILED®; 5 mm; round; part. diffused; long; Viewing Angle: 100 Degrees** (2φ)							
▼ LU H371-FJ	super-red/ green	1 … 8	64	Q62703-Q2050	1000		
▼ LU H371-GK	super-red/ green	1.6 … 12.5	64	Q62703-Q2051	500		
Mini-LEDs; 1 mm; diffus; Vollwinkel: 60 Grad (2φ) **Mini LEDs; 1 mm; diffused; Viewing Angle: 60 Degrees** (2φ)							
LS U260-EO	super-red	≥ 0.63	65	Q62703-Q1492	500		
LY U260-EO	yellow	≥ 0.63	65	Q62703-Q1493	500		
LG U260-EO	green	≥ 0.63	65	Q62703-Q1494	500		

Typ Type	Farbe Colour	I_V (I_F = 2 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999
Niedrigstrom-LEDs; 3 mm; diffus; lang; Vollwinkel: 60 Grad (2φ) **Low-Current LEDs; 3 mm; diffused; long; Viewing Angle: 60 Degrees** (2φ)							
LS 3369-EH	super-red	0.63 … 5	66	Q62703-Q1748	1000		
▼ LS 3369-FH	super-red	1 … 5	66	Q62703-Q1711	1000		
LY 3369-EH	yellow	0.63 … 5	66	Q62703-Q1749	1000		
▼ LY 3369-FH	yellow	1 … 5	66	Q62703-Q1712	1000		
LG 3369-EH	green	0.63 … 5	66	Q62703-Q1750	1000		
▼ LG 3369-FH	green	1 … 5	66	Q62703-Q1713	1000		
Niedrigstrom-LEDs; 5 mm; diffus; lang; Vollwinkel: 50 Grad (2φ) **Low-Current LEDs; 5 mm; diffused; long; Viewing Angle: 50 Degrees** (2φ)							
LS 5469-EH	super-red	0.63 … 5	67	Q62703-Q1751	1000		
▼ LS 5469-FH	super-red	1 … 5	67	Q62703-Q1714	1000		
LY 5469-EH	yellow	0.63 … 5	67	Q62703-Q1752	1000		
▼ LY 5469-FH	yellow	1 … 5	67	Q62703-Q1715	1000		
LG 5469-EH	green	0.63 … 5	67	Q62703-Q1753	1000		
▼ LG 5469-FH	green	1 … 5	67	Q62703-Q1716	1000		

LU H371

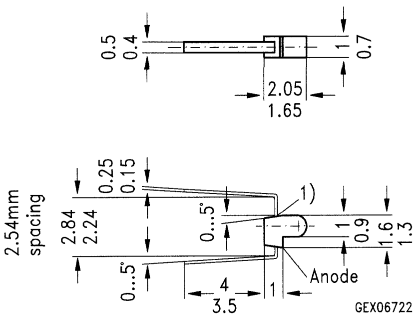
Bild/Figure 64



Approx. weight 0.4 g

L* U260

Bild/Figure 65

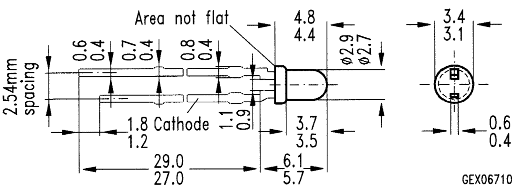


1) Detaching area for tools
Flash not true to size

Approx. weight 0.01 g

L* 3369

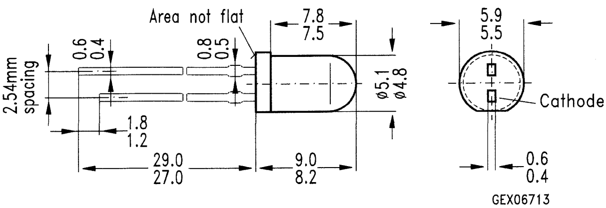
Bild/Figure 66



Approx. weight 0.15 g

L* 5469

Bild/Figure 67



Approx. weight 0.35 g

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999	3000 bis/to 5999
BLUE LINE ™; 3 mm; klar; lang; Vollwinkel: 40 Grad (2φ) **BLUE LINE ™; 3 mm; clear; long; Viewing Angle: 40 Degrees** (2φ)								
▼ LB 3331-FO	blue	3.0 (≥ 1.0)	68	Q62703-Q2557	100			
BLUE LINE ™; 5 mm; klar; lang; Vollwinkel: 35 Grad (2φ) **BLUE LINE ™; 5 mm; clear; long; Viewing Angle: 35 Degrees** (2φ)								
▼ LB 5410-GO	blue	3.0 (≥ 1.6)	69	Q62703-Q5700	100			
BLUE LINE ™; Gehäuse P-LCC-2; farblos klar; Vollwinkel: 120 Grad (2φ) **(gegurtet)** **BLUE LINE ™; Package P-LCC-2; colourless clear; Viewing Angle: 120 Degrees** (2φ) **(taped)**								
▼ LB T670-BO	blue	0.35 (≥0.1)[1]	70	Q62703-Q2558	100			

1) I_F = 20 mA

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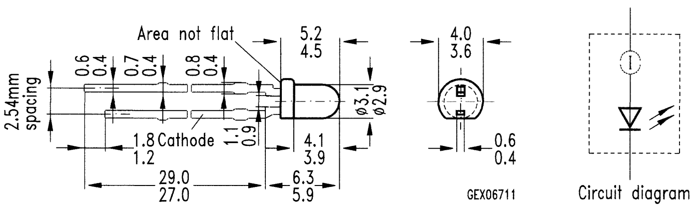
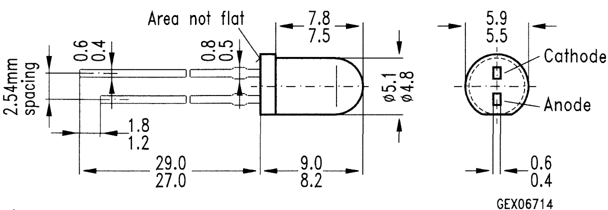
LB 3331 **Bild/Figure 68**



Approx. weight 0.15 g

LB 5410 **Bild/Figure 69**



Approx weight 0.35 g

Lumineszenzdioden (LEDs)
LEDs

Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
SMT SOT-23 LEDs; diffus; Vollwinkel: 140 Grad (2φ) (gegurtet) **SMT SOT-23 LEDs; diffused; Viewing Angle: 140 Degrees (2φ) (taped)**							
LS S260-DO	super-red	≥ 0.40	71	Q62703-Q1640	1000		
LY S260-DO	yellow	≥ 0.40	71	Q62703-Q1657	1000		
LG S260-DO	green	≥ 0.40	71	Q62703-Q1608	1000		
LU S250-DO	super-red/ green	≥ 0.40	71	Q62703-Q1642	500		
LV S260-DO	super-red/ super-red	≥ 0.40	71	Q62703-Q2067	500		
LW S260-DO	green/green	≥ 0.40	71	Q62703-Q1038	500		
SMT-Niedrigsstrom SOT-23 LED **SMT Low-Current SOT-23 LED**							
▼ LS S269-BO	super-red	≥ 0.16[1]	71	Q62703-Q1566	1000		
▼ LY S269-BO	yellow	≥ 0.16[1]	71	Q62703-Q1568	1000		
▼ LG S269-BO	green	≥ 0.16[1]	71	Q62703-Q1570	1000		
SMT-TOPLED® ; Gehäuse P-LCC-2; farblos klar; Vollwinkel: 120 Grad (2φ) (gegurtet) **SMT-TOP-LED® ; package P-LCC-2; colorless clear; Viewing Angle: 120 Deg. (2φ) (taped)**							
LS T670-HK	super-red	2.5 … 12.5	70	Q62703-Q2309	750		
LS T670-J	super-red	4 … 8	70	Q62703-Q2357	500		
LS T670-K	super-red	6.3 … 12.5	70	Q62703-Q2358	500		
LS T670-JL	super-red	4 … 20	70	Q62703-Q2502	500		
LO T670-HK	orange	2.5 … 12.5	70	Q62703-Q2310	750		
LO T670-J	orange	4 … 8	70	Q62703-Q2475	500		
LO T670-K	orange	6.3 … 12.5	70	Q62703-Q2476	500		
LO T670-JL	orange	4 … 20	70	Q62703-Q2503	500		
LY T670-HK	yellow	2.5 … 12.5	70	Q62703-Q2311	750		
▼ LY T670-H	yellow	2.5 … 5	70	Q62703-Q2618	500		
LY T670-J	yellow	4 … 8	70	Q62703-Q2376	500		
LY T670-JL	yellow	4 … 20	70	Q62703-Q2504	500		
LG T670-HK	green	2.5 … 12.5	70	Q62703-Q2312	750		
LG T670-J	green	4 … 8	70	Q62703-Q2377	500		
LG T670-K	green	6.3 … 12.5	70	Q62703-Q2378	500		
LG T670-JL	green	4 … 20	70	Q62703-Q2505	500		
▼ LP T670-FJ	pure green	1 … 8	70	Q62703-Q2619	500		
▼ LP T670-G	pure green	1.6 … 3.2	70	Q62703-Q2620	500		
▼ LP T670-H	pure green	2.5 … 5	70	Q62703-Q2555	500		
▼ LP T670-GK	pure green	1.6 … 12.5	70	Q62703-Q2456	500		

1) I_F = 2 mA

= SMD (Surface Mounted Device)

Lumineszenzdioden (LEDs)
LEDs

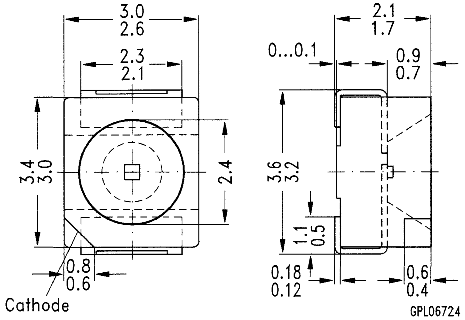
Typ Type	Farbe Colour	I_V (I_F = 50 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
SMT-TOPLED® (Fortsetzung) **SMT-TOP-LED®** (Cont'd)							
▼ LH T674-KM	hyperred, DH	6.3 … 32	70	Q62703-Q2329	500		
▼ LH T674-L	hyperred, DH	10 … 20	70	Q62703-Q2282	500		
▼ LH T674-M	hyperred, DH	16 … 32	70	Q62703-Q2288	500		
▼ LH T674-LN	hyperred, DH	10 … 50	70	Q62703-Q2617	500		
Super SMT-TOPLED®; **Gehäuse P-LCC-2; farblos klar; Vollwinkel: 120 Grad** (2φ) **(gegurtet)** **Super SMT-TOP-LED®;** **package P-LCC-2; colourless clear; Viewing Angle: 120 Deg.** (2φ) **(taped)**							
▼ LS T672-LN	super-red	10 … 50	70	Q62703-Q2621	500		
▼ LS T672-M	super-red	16 … 32	70	Q62703-Q2622	500		
▼ LS T672-N	super-red	25 … 50	70	Q62703-Q2513	500		
▼ LS T672-MQ	super-red	16 … 125	70	Q62703-Q2331	500		
▼ LO T672-LN	orange	10 … 50	70	Q62703-Q2623	500		
▼ LO T672-N	orange	25 … 50	70	Q62703-Q2494	500		
▼ LO T672-P	orange	40 … 80	70	Q62703-Q2493	500		
▼ LO T672-MQ	orange	16 … 125	70	Q62703-Q2330	500		
▼ LY T672-LN	yellow	10 … 50	70	Q62703-Q2624	500		
▼ LY T672-N	yellow	25 … 50	70	Q62703-Q2515	500		
▼ LY T672-P	yellow	40 … 80	70	Q62703-Q2516	500		
▼ LY T672-MQ	yellow	16 … 125	70	Q62703-Q2332	500		
▼ LG T672-LN	green	10 … 50	70	Q62703-Q2625	500		
▼ LG T672-N	green	25 … 50	70	Q62703-Q2517	500		
▼ LG T672-P	green	40 … 80	70	Q62703-Q2518	500		
▼ LG T672-MQ	green	16 … 125	70	Q62703-Q2333	500		
▼ LP T672-KM	pure green	6.3 … 32	70	Q62703-Q2626	500		
▼ LP T672-L	pure green	10 … 20	70	Q62703-Q2627	500		
▼ LP T672-M	pure green	16 … 32	70	Q62703-Q2289	500		
▼ LP T672-LP	pure green	10 … 80	70	Q62703-Q2334	500		
Niedrigstrom SMT-TOPLED®; **Gehäuse P-LCC-2; farblos klar; Vollwinkel: 120 Grad** (2φ) **(gegurtet)** **Low-Current SMT-TOP-LED®;** **package P-LCC-2; colourless clear; Viewing Angle: 120 Deg.** (2φ) **(taped)**							
LS T679-CO	super-red	1 (≥ 0.25)[1]	70	Q62703-Q2383	500		
LY T679-CO	yellow	1 (≥ 0.25)[1]	70	Q62703-Q2384	500		
LG T679-CO	green	1 (≥ 0.25)[1]	70	Q62703-Q2385	500		

1) I_F = 2 mA

= SMD (Surface Mounted Device)

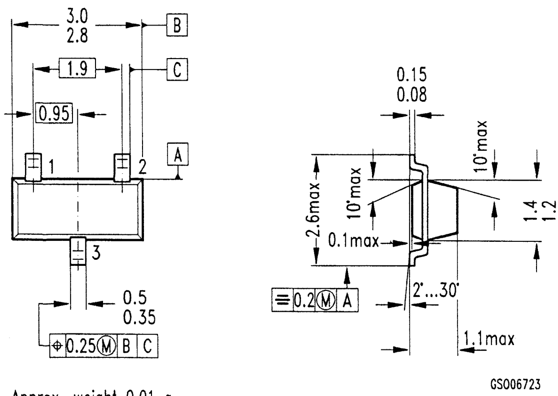
8

L* T670, L* T672, LH T673, LH T674, L* T679 — **Bild/Figure 70**

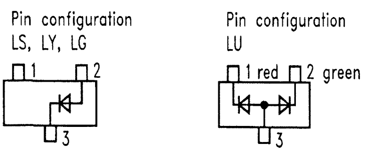


Approx. weight 0.03 g

L* S260 — **Bild/Figure 71**



Approx. weight 0.01 g



Pin configuration (top view)

Pin	LS S260-DO LY S260-DO LG S260-DO	LU S250-DO LV S260-DO LW S260-DO
1	Not connected	Cathode (red)
2	Anode	Cathode (green)
3	Cathode	Common anode

Lumineszenzdioden (LEDs)
LEDs

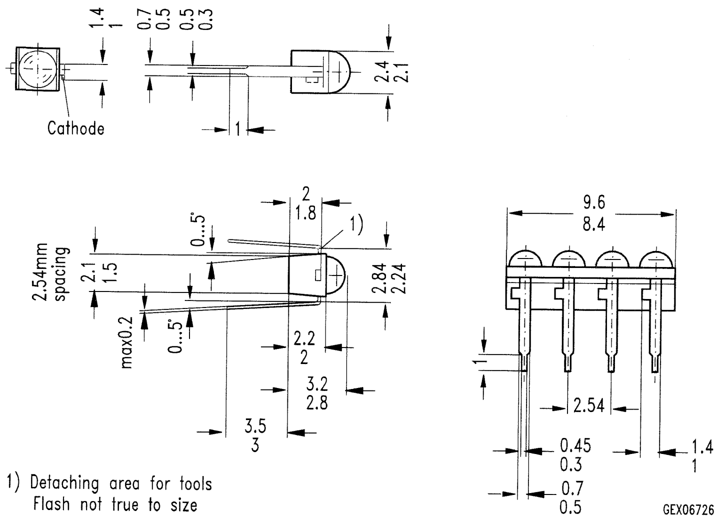
Typ Type	Farbe Colour	I_V (I_F = 10 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999	3000 bis/to 5999
Zeilen-LEDs; 2 mm; diffus; Vollwinkel: 100 Grad (2φ) **Array LEDs; 2 mm; diffused; Viewing Angle: 100 Degrees** (2φ)								
LR Z181-CO	red	≥ 0.25	72	Q62703-Q1495	1000			
LR Z182-CO	red	≥ 0.25	72	Q62703-Q1496	500			
LR Z183-CO	red	≥ 0.25	72	Q62703-Q1497	250			
LR Z184-CO	red	≥ 0.25	72	Q62703-Q1498	150			
LR Z185-CO	red	≥ 0.25	72	Q62703-Q1499	125			
▼ LR Z186-CO	red	≥ 0.25	72	Q62703-Q1500	100			
▼ LR Z187-CO	red	≥ 0.25	72	Q62703-Q1501	100			
▼ LR Z188-CO	red	≥ 0.25	72	Q62703-Q1502	100			
▼ LR Z189-CO	red	≥ 0.25	72	Q62703-Q1503	100			
▼ LR Z180-CO	red	≥ 0.25	72	Q62703-Q1504	100			
LY Z181-CO	yellow	≥ 0.25	72	Q62703-Q1505	500			
LG Z181-CO	green	≥ 0.25	72	Q62703-Q1506	1000			
LG Z182-CO	green	≥ 0.25	72	Q62703-Q1507	500			
LG Z183-CO	green	≥ 0.25	72	Q62703-Q1508	250			
LG Z184-CO	green	≥ 0.25	72	Q62703-Q1509	150			
LG Z185-CO	green	≥ 0.25	72	Q62703-Q1510	125			
▼ LG Z186-CO	green	≥ 0.25	72	Q62703-Q1511	200			
▼ LG Z188-CO	green	≥ 0.25	72	Q62703-Q1513	100			

Typ Type	Farbe Colour	I_V (I_F = 15 mA) mcd	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999	3000 bis/to 5999
▼ LG Z180-CO	green	≥ 0.25	72	Q62703-Q1515	20			

8

LR Z18*, LY Z181, LG Z18*

Bild/Figure 72



1) Detaching area for tools
Flash not true to size

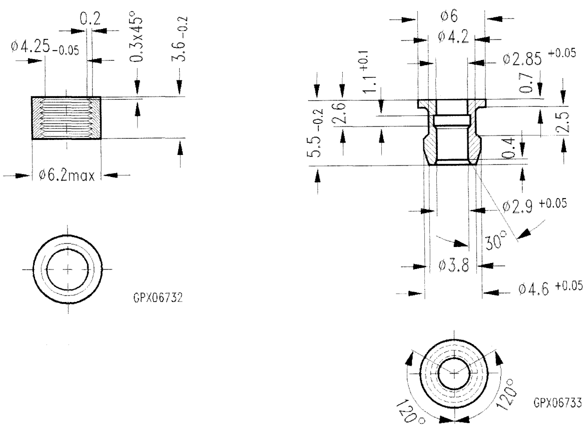
Approx. weight 0.02 g

LED-Zubehör
Accessories for LEDs

Typ Type	Farbe Colour	Ø LED mm	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 2999	3000 bis/to 5999
Hülse/Ring Sleeve/ring	glass clear	3	73	Q62901-B61	1250		
	black	3	73	Q62901-B62	1250		
	glass clear	5	74	Q62901-B64	1250		
	black	5	74	Q62901-B65	1250		
Aneinanderreihbare Halterungen Endstackable clips	black	3	75	Q62902-B152-F222	1000		
	black	5	76	Q62902-B153-F222	1000		
Winkelhalterung Rectangular mounting part	grey	5	77	Q62902-B155-F222	1000		
	black	5	78	Q62902-B156-F222	1000		
Reflektor Reflector	silver	5	79	Q62902-B141-F222	1000		
	silver	3	80	Q62902-B154-F222	1000		

8

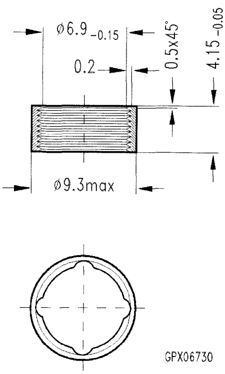
Bild/Figure 73

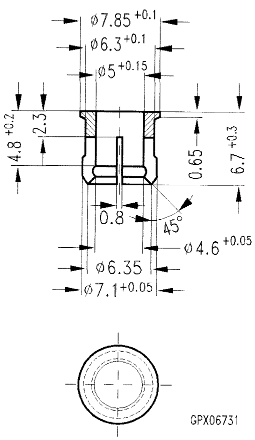


Hülse und Ring/Sleeves and ring 3 mm LED:
∅ Bohrung/bore = 4.3 – 4.4 mm*)
Stärke der Montageplatte = 1.0 – 1.5 mm*)
Thickness of mounting board = 1.0 – 1.5 mm*)

*) Empfohlene Werte/Recommended dimensions

Bild/Figure 74

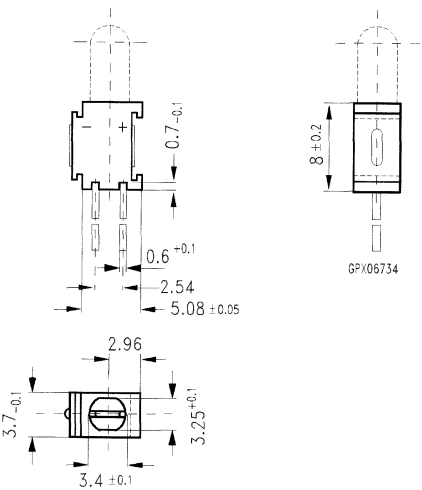




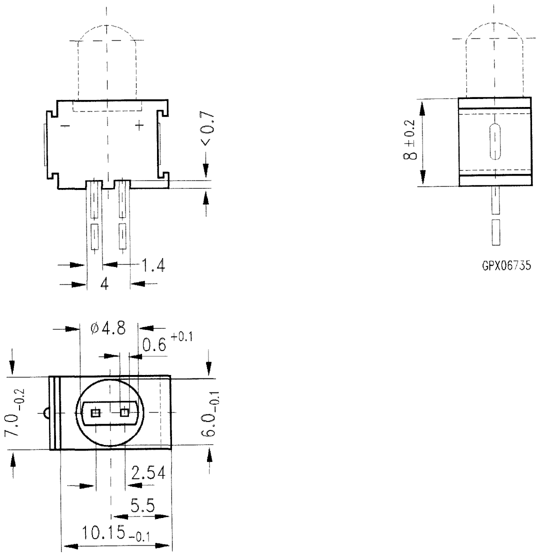
5 mm LED:
∅ Bohrung/bore = 6.45 – 6 mm*)
Stärke der Montageplatte = 1.5 – 2.5 mm*)
Thickness of mounting board = 1.5 – 2.5 mm*)

*) Empfohlene Werte/Recommended dimensions

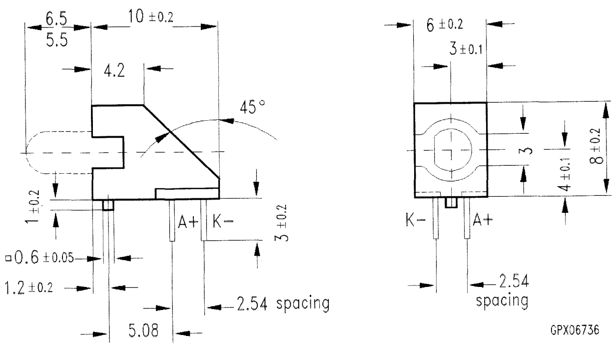
Bild/Figure 75



Bild/Figure 76



Bild/Figure 77



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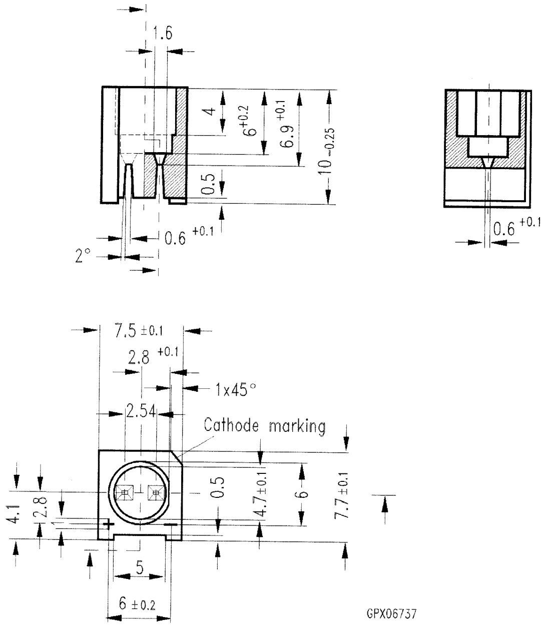
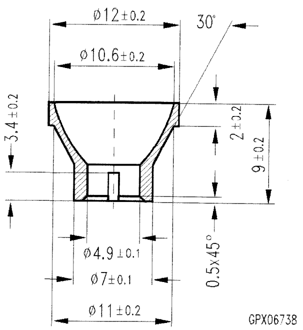
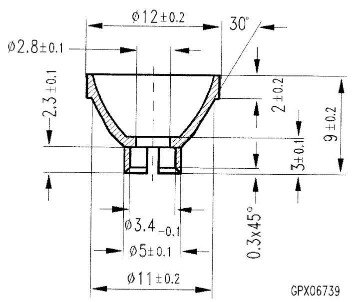
Bild/Figure 78



Bild/Figure 79



Bild/Figure 80



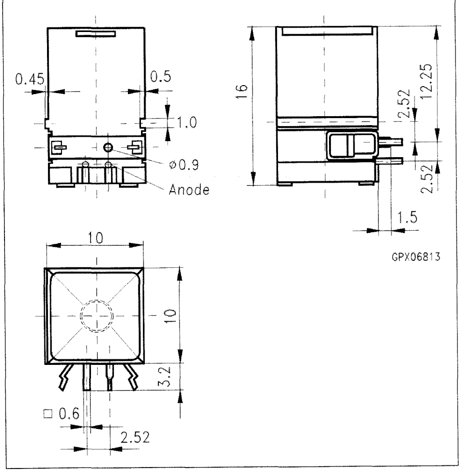
LED-Flächenleuchte 10 × 10 mm
LED-Illuminated Surface 10 × 10 mm

I_R = 0.01 (≤10) µA; V_R = 5 V;
V_F = 2.0 (≤ 2.6) V; I_F = 10 mA;
V_F = 1.6 (≤ 2.0) V; I_F = 10 mA (nur rote LEDs; only red LED)

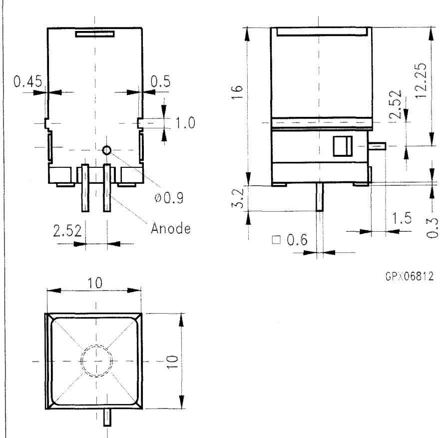
Typ Type	Farbe Colour	Φ_V I_F = 15 mA mlm	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Flächenleuchte liegend Illuminated Surface horizontal	super-red	32	81	Q62902-B167-F222	108		
	yellow	32	81	Q62902-B168-F222	108		
	green	32	81	Q62902-B169-F222	108		
	super-red	100[1]	81	Q62902-B170-F222	75		
	yellow	100[1]	81	Q62902-B171-F222	72		
	green	100[1]	81	Q62902-B172-F222	72		
Flächenleuchte stehend Illuminated Surface vertical	super-red	32	82	Q62902-B173-F222	100		
	yellow	32	82	Q62902-B174-F222	105		
	green	32	82	Q62902-B175-F222	100		
	super-red	100[1]	82	Q62902-B176-F222	60		
	yellow	100[1]	82	Q62902-B177-F222	60		
	green	100[1]	82	Q62902-B178-F222	60		

[1] I_F = 45 mA

Bild/Figure 81



Bild/Figure 82

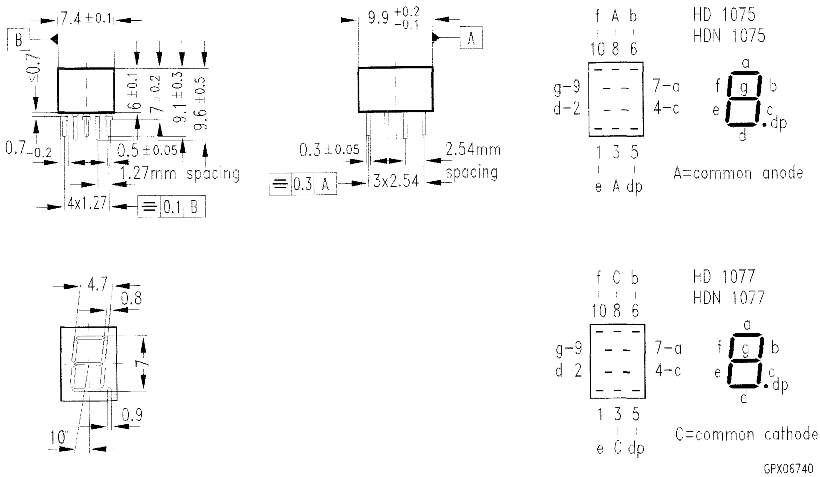


LED-Anzeigen
LED-Displays

Typ Type	V_F (typ.) V	I_F (typ.) mA	Farbe Colour	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999
LED-Anzeigen; 1-stellig; 7 mm Symbolhöhe 1-Digit LED Displays; 7 mm Character Height								
					Q68000-			
HD 1075 R	1.6	10	red	83	-A5747	100		
HD 1075 G	2.4	10	green	83	-A6346	100		
HD 1075 O	2.0	10	super-red	83	-A5746	100		
HD 1077 R	1.6	10	red	83	-A5759	100		
HD 1077 G	2.4	10	green	83	-A6348	100		
HD 1077 O	2.0	10	super-red	83	-A5758	100		
Niedrigstrom-Anzeigen; 1-stellig; 7 mm Symbolhöhe 1-Digit Low-Current Displays; 7 mm Character Height								
					Q68000-			
HDN 1075 O	1.8	2	super-red	83	-A4315	100		
HDN 1077 O	1.8	2	super-red	83	-A4317	100		
LED-Anzeigen; 1-stellig; 10 mm Symbolhöhe 1-Digit LED Displays; 10 mm Character Height								
					Q68000-			
HD 1105 R	1.6	10	red	84	-A5741	120		
HD 1105 G	2.4	10	green	84	-A6350	120		
HD 1105 O	2.0	10	super-red	84	-A5766	120		
HD 1107 R	1.6	10	red	84	-A5743	120		
HD 1107 G	2.4	10	green	84	-A6352	120		
HD 1107 O	2.0	10	super-red	84	-A5772	120		

HD 1075, HD 1077, HDN 1075, HDN 1077

Bild/Figure 83



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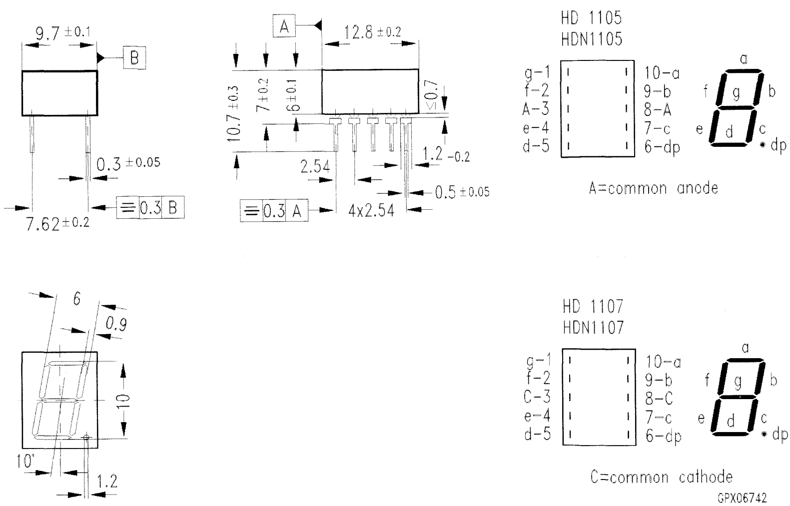
HD 1105, HD 1107, HDN 1105, HDN 1107

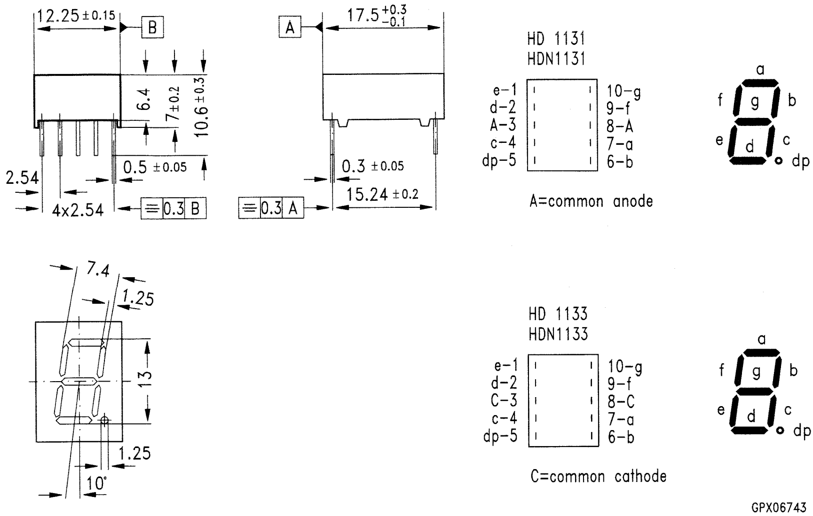
Bild/Figure 84



LED-Anzeigen
LED-Displays

Typ Type	V_F (typ.) V	I_F (typ.) mA	Farbe Colour	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999
Niedrigstrom-Anzeigen; 1-stellig; 10 mm Symbolhöhe 1-Digit Low-Current Displays; 10 mm Character Height								
					Q68000-			
HDN 1105 O	1.8	2	super-red	84	-A4319	120		
HDN 1107 O	1.8	2	super-red	84	-A4321	120		
LED-Anzeigen; 1-stellig; 13,5 mm Symbolhöhe 1-Digit LED Displays; 13.5 mm Character Height								
					Q68000-			
HD 1131 R	1.6	10	red	85	-A7821	120		
HD 1131 G	2.4	10	green	85	-A7820	120		
HD 1131 O	2.0	10	super-red	85	-A7822	120		
HD 1133 R	1.6	10	red	85	-A7873	120		
HD 1133 G	2.4	10	green	85	-A7871	120		
HD 1133 O	2.0	10	super-red	85	-A7872	120		
Niedrigstrom-Anzeigen; 1-stellig; 13,5 mm Symbolhöhe 1-Digit Low-Current Displays; 13.5 mm Character Height								
					Q68000-			
HDN 1131 O	1.8	2	super-red	85	-A6433	120		
HDN 1133 O	1.8	2	super-red	85	-A6434	120		

HD 1131, HD 1133, HDN 1131, HDN 1133 **Bild/Figure 85**



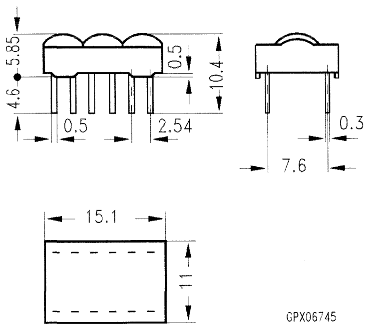
LED-Anzeigen
LED-Displays

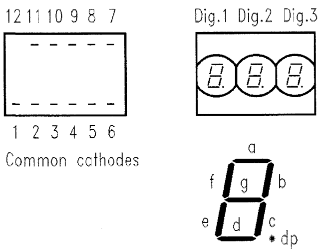
Typ Type	V_F I_F = 20 mA V	I_F (max.) mA	I_V pro Stelle per Digit I_F =5 mA µcd (typ.)	Farbe Colour	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
LED-Anzeigen; monolithisch; mehrstellig; 2,8 mm Symbolhöhe Multi-Digit, Monolithic LED Displays; 2.8 mm Character Height										
						Q68000-				
DL-330 M	1.7	< 20	2500	red	86	-A5993	14			
DL-340 M	1.7	< 20	2500	red	87	-A5994	10			
LED-Anzeigen; monolitisch; mehrstellig; 3,8 mm Symbolhöhe Multi-Digit, Monolithic LED Displays; 3.8 mm Character Height										
						Q68000-				
DL-430 M	1.7	< 20	2500	red	88	-A5995	12			
DL-440 M	1.7	< 20	2500	red	89	-A5996	14			

Typ Type	V_F I_F = 20 mA V	I_F (max.) mA	Farbe Colour	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	
10-Balken-Elemente (Bargraph) 10-Element Linear Displays (Bargraph)									
					Q68000-				
RBG 1000	1.7	20	red	90	-A5967	40			
OBG 1000	2.2	20	super-red	90	-A5968	40			
YBG 1000	2.4	20	yellow	90	-A5969	40			
GBG 1000	2.4	20	green	90	-A5970	40			
RBG 4820	1.6	30	red	91	-A4408	40			
OBG 4830	2.1	30	super-red	91	-A4407	40			
YBG 4840	2.2	20	yellow	91	-A4409	40			
GBG 4850	2.1	30	green	91	-A4404	40			

DL 330 M

Bild/Figure 86



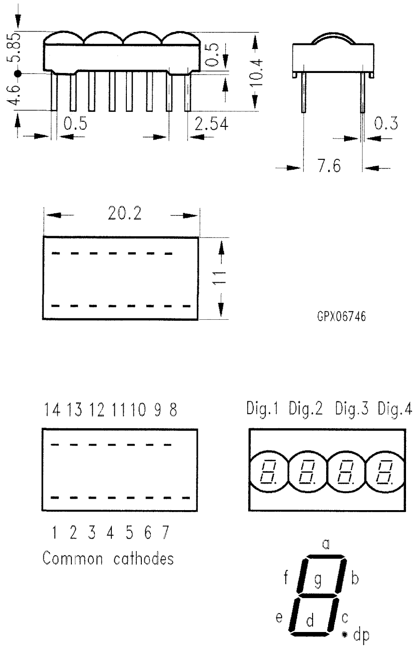


Pin	Function
1	Cathode D1
2	Anode e
3	Anode d
4	Cathode D2
5	Anode c
6	Anode dp
7	Cathode D3
8	Anode b
9	Anode g
10	Anode a
11	Anode f
12	No pin

8

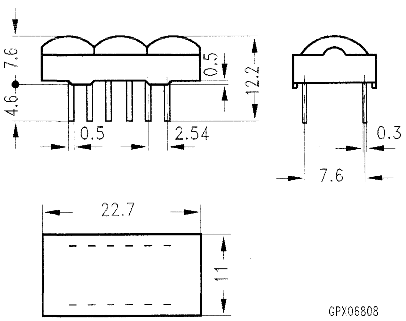
DL 340 M

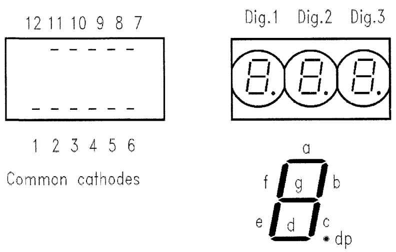
Bild/Figure 87



Pin	Function
1	N/C
2	Anode e
3	Anode d
4	Anode c
5	Anode dp
6	Anode g
7	Cathode D4
8	No pin
9	Anode b
10	Cathode D3
11	Anode f
12	Cathode D2
13	Anode a
14	Cathode D1

DL 430 M **Bild/Figure 88**

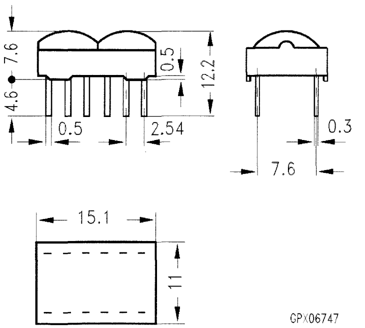


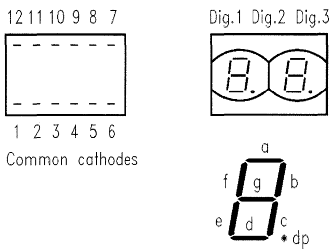


Pin	Function
1	Cathode D1
2	Anode e
3	Anode d
4	Cathode D2
5	Anode c
6	Anode dp
7	Cathode D3
8	Anode b
9	Anode g
10	Anode a
11	Anode f
12	No pin

DL 440 M

Bild/Figure 89

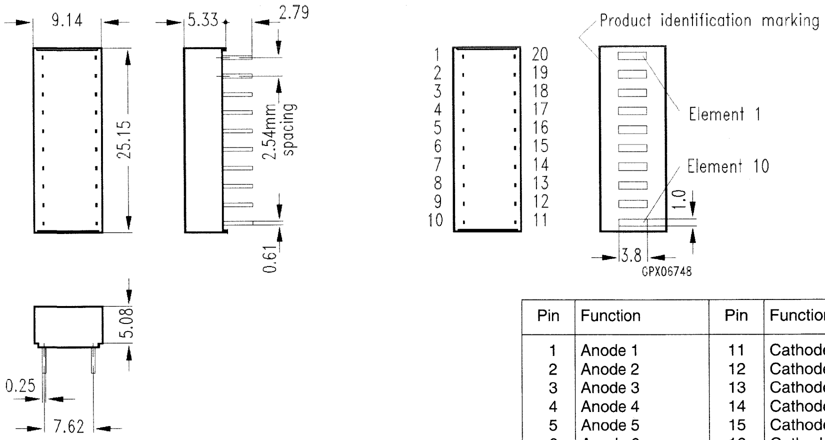




Pin	Function
1	No pin
2	Anode e
3	Anode d
4	No pin
5	Anode c
6	Anode dp
7	Cathode D2
8	Anode b
9	Anode g
10	Anode a
11	Anode f
12	Cathode D1

RBG, OBG, YBG, GBG 1000

Bild/Figure 90

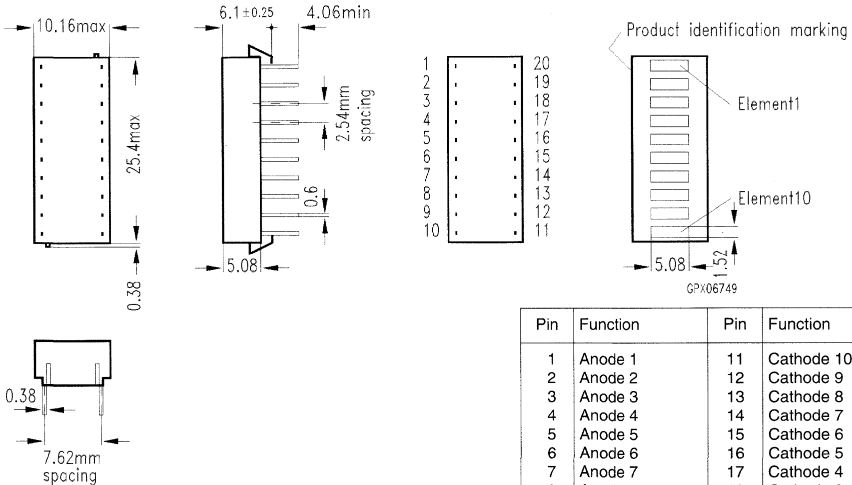


Pin	Function	Pin	Function
1	Anode 1	11	Cathode 10
2	Anode 2	12	Cathode 9
3	Anode 3	13	Cathode 8
4	Anode 4	14	Cathode 7
5	Anode 5	15	Cathode 6
6	Anode 6	16	Cathode 5
7	Anode 7	17	Cathode 4
8	Anode 8	18	Cathode 3
9	Anode 9	19	Cathode 2
10	Anode 10	20	Cathode 1

8

RBG 4820, OBG 4830, YBG 4840, GBG 4850

Bild/Figure 91



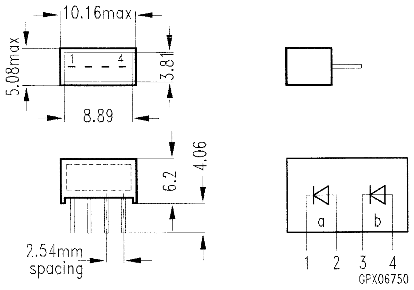
Pin	Function	Pin	Function
1	Anode 1	11	Cathode 10
2	Anode 2	12	Cathode 9
3	Anode 3	13	Cathode 8
4	Anode 4	14	Cathode 7
5	Anode 5	15	Cathode 6
6	Anode 6	16	Cathode 5
7	Anode 7	17	Cathode 4
8	Anode 8	18	Cathode 3
9	Anode 9	19	Cathode 2
10	Anode 10	20	Cathode 1

LED-Anzeigen
LED-Displays

Typ Type	V_F I_F = 20 mA V	I_F max. mA	Farbe Colour	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 1999
Leuchtflächen **Light Bars**									
					Q68000-				
HLMP 2300	2.0	30	super-red	92	-A7782	120			
HLMP 2400	2.1	25	yellow	92	-A7785	120			
HLMP 2500	2.2	30	green	92	-A7779	120			
HLMP 2655	2.0	30	super-red	93	-A7783	120			
HLMP 2755	2.1	25	yellow	93	-A7786	120			
HLMP 2855	2.2	30	green	93	-A7780	80			
HLMP 2685	2.0	30	super-red	94	-A7784	60			
HLMP 2785	2.1	25	yellow	94	-A7787	60			
HLMP 2885	2.2	30	green	94	-A7781	60			
HLMP 2350	2.0	30	super-red	95	-A4312	100			
HLMP 2450	2.1	25	yellow	95	-A4507	100			
HLMP 2550	2.2	30	green	95	-A2436	100			
HLMP 2600	2.0	30	super-red	96	-A1627	120			
HLMP 2700	2.1	25	yellow	96	-A1226	120			
HLMP 2800	2.2	30	green	96	-A1210	80			
HLMP 2620	2.0	30	super-red	97	-A4505	60			
HLMP 2720	2.1	25	yellow	97	-A4508	60			
HLMP 2820	2.2	30	green	97	-A3867	60			

HLMP 2300, HLMP 2400, HLMP 2500

Bild/Figure 92

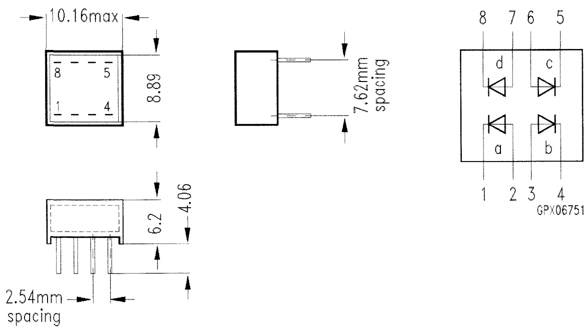


Pin	Function
1	Cathode a
2	Anode a
3	Cathode b
4	Anode b

8

HLMP 2655, HLMP 2755, HLMP 2855

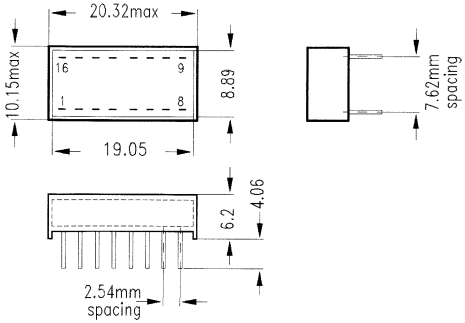
Bild/Figure 93

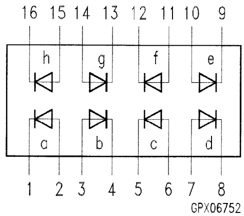


Pin	Function
1	Cathode a
2	Anode a
3	Anode b
4	Cathode b
5	Cathode c
6	Anode c
7	Anode d
8	Cathode d

HLMP 2685, HLMP 2785, HLMP 2885

Bild/Figure 94

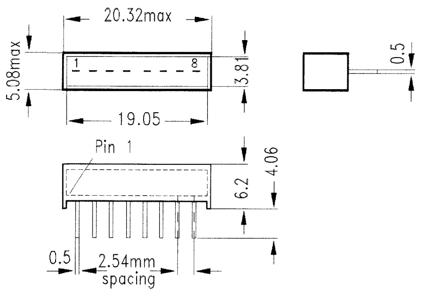


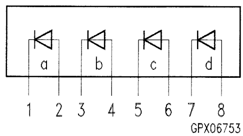


Pin	Function	Pin	Function
1	Cathode a	9	Cathode e
2	Anode a	10	Anode e
3	Anode b	11	Anode f
4	Cathode b	12	Cathode f
5	Cathode c	13	Cathode g
6	Anode c	14	Anode g
7	Anode d	15	Anode h
8	Cathode d	16	Cathode h

HLMP 2350, HLMP 2450, HLMP 2550

Bild/Figure 95

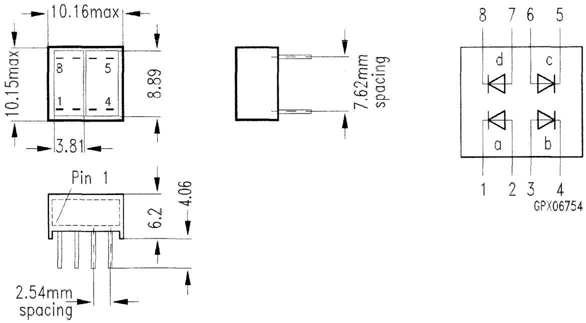




Pin	Function
1	Cathode a
2	Anode a
3	Cathode b
4	Anode b
5	Cathode c
6	Anode c
7	Cathode d
8	Anode d

HLMP 2600, HLMP 2700, HLMP 2800

Bild/Figure 96

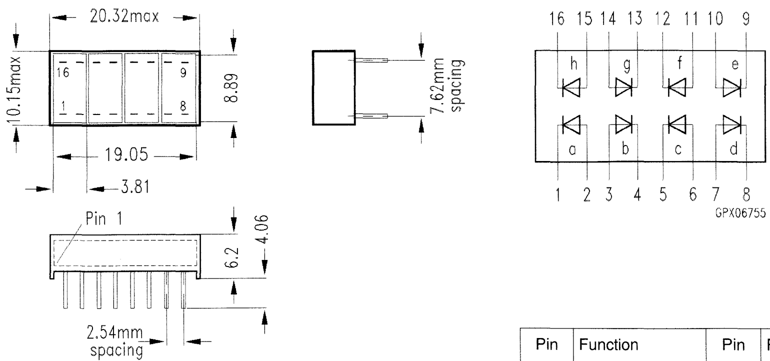


Pin	Function
1	Cathode a
2	Anode a
3	Anode b
4	Cathode b
5	Cathode c
6	Anode c
7	Anode d
8	Cathode d

8

HLMP 2620, HLMP 2720, HLMP 2820

Bild/Figure 97



Pin	Function	Pin	Function
1	Cathode a	9	Cathode e
2	Anode a	10	Anode e
3	Anode b	11	Anode f
4	Cathode b	12	Cathode f
5	Cathode c	13	Cathode g
6	Anode c	14	Anode g
7	Anode d	15	Anode h
8	Cathode d	16	Cathode h

Intelligente LED-Anzeigen
Intelligent LED-Displays

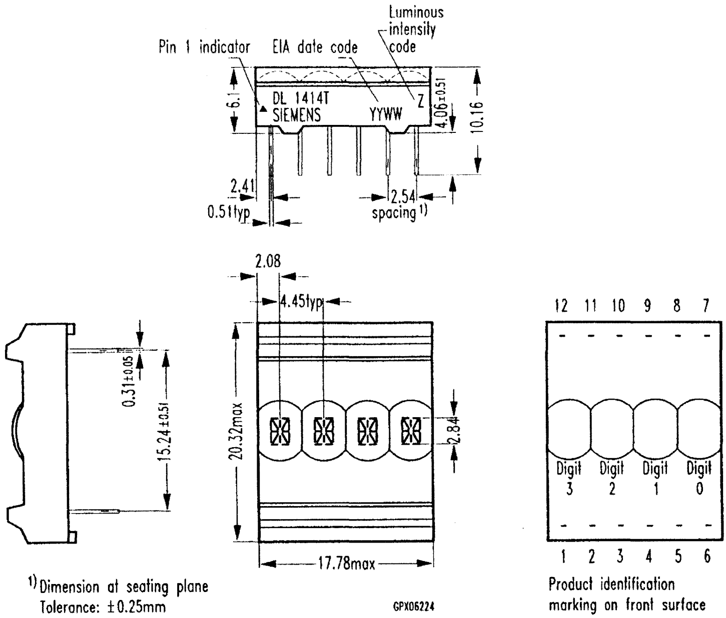
Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ DL 1414 T	Q68000-A5559	6				
■ ⊙ DL 1416 T	Q68000-A4825	10				
⊙ DL 1416 B	Q68000-A4354	10				
■ ⊙ DL 1814	Q68000-A7156	4				
⊙ DL 2416 T	Q68000-A5577	10				
⊙ DL 3416	Q68000-A6366	3				

Monolithische Anzeigen mit 64-ASCII-Zeichen
Alphanumerische Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Typ. Lichtstärke pro Stelle: I_V = 0,5 mcd (0,5 V, 8 Segmente an)
Betriebstemperatur: – 40 ... + 85 °C

Monolithic displays with 64 ASCII characters
Alphanumeric displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Typ. luminous intensity per digit: I_V = 0.5 mcd (0.5 V, 8 segments on)
Operating temperature range: – 40 ... + 85 °C

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digit	Segmente pro Stelle Segments per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Zugriff Access Time ns	Bild Fig.
⊙ DL 1414 T	red	2.8	4	17	± 40/± 55	110	98
■ ⊙ DL 1416 T	red	4.1	4	16	± 20/± 20	1400	99
⊙ DL 1416 B	red	4.1	4	17	± 30/± 50	350	99
■ ⊙ DL 1814	red	2.8	8	17	± 40/± 40	525	100
⊙ DL 2416 T	red	4.1	4	17	± 45/± 55	110	101
⊙ DL 3416	red	5.7	4	17	± 45/± 55	110	102

DL 1414 T **Bild/Figure 98**



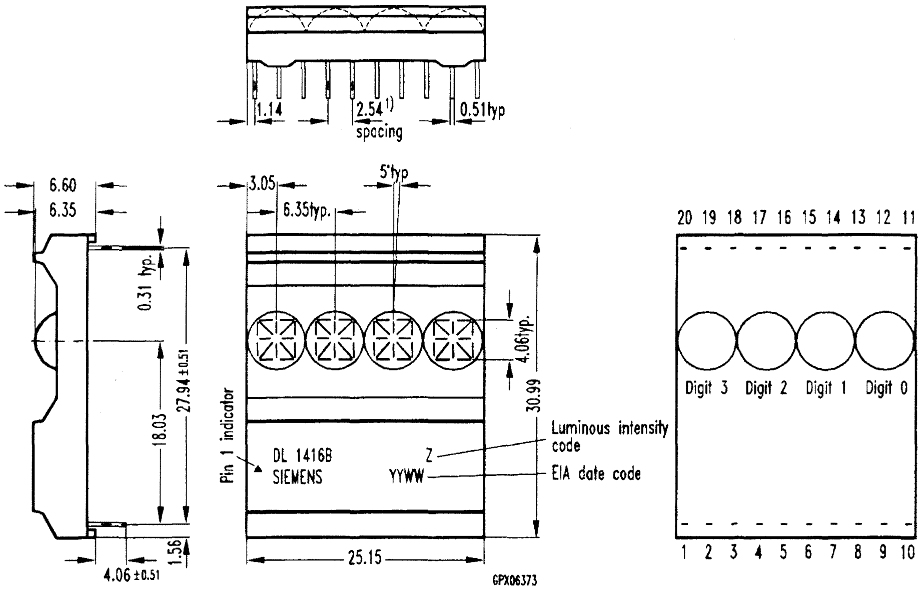
1) Dimension at seating plane
Tolerance: ±0.25mm

Product identification marking on front surface

Pin	Function	
1	D5	Data input
2	D4	Data input
3	$\overline{WR}$	Write
4	A1	Address
5	AØ	Address
6	V_{CC}	Power supply + 5 V
7	GND	Ground Ø V
8	DØ	Data input (LSB)
9	D1	Data input
10	D2	Data input
11	D3	Data input
12	D6	Data input (MSB)

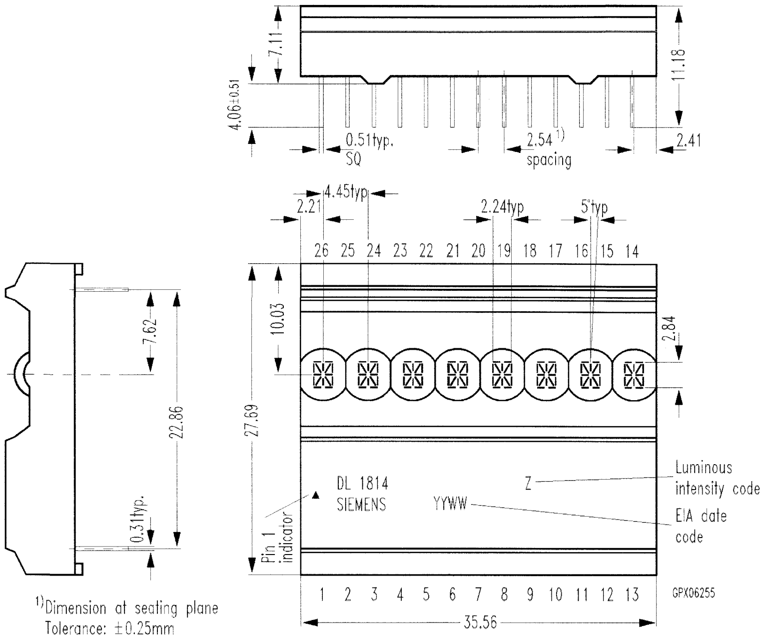
8

DL 1416 B, DL 1416 T — **Bild/Figure 99**



Pin	Function	
1	D5	Data input
2	D4	Data input
3	DØ	Data input
4	D1	Data input
5	D2	Data input
6	D3	Data input
7	$\overline{CE}$	Chip enable
8	$\overline{WR}$	Write
9	$\overline{CU}$	Cursor input
10	AØ	Address
11	A1	Address
12		Unused
13		Unused
14		Unused
15		Unused
16		Unused
17		Unused
18	V+	Power supply (positive pole)
19	GND	Ground (Ø V)
20	D6	Data input

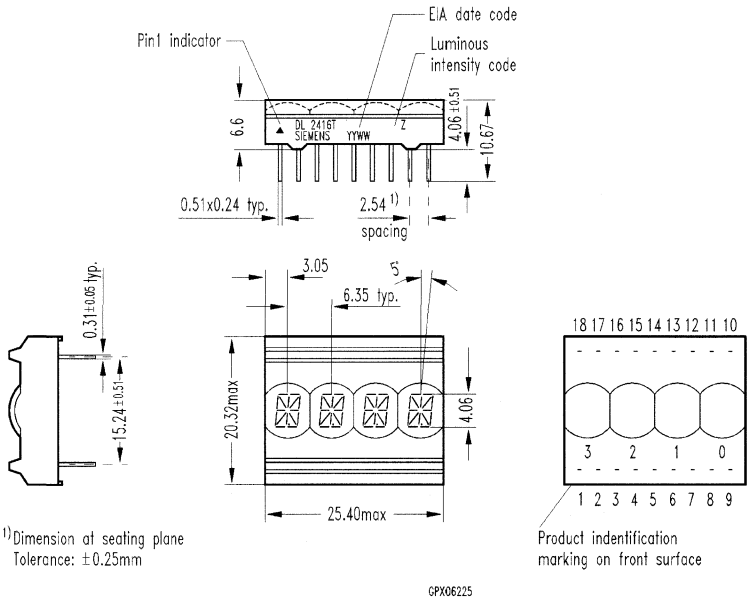
DL 1814 **Bild/Figure 100**



Pin	Function		Pin	Function
1	DØ	Data input (LSB)	14	$\overline{BL}$ Display blank
2	D1	Data input	15	No pin
3	D2	Data input	16	No pin
4	D3	Data input	17	No pin
5	D4	Data input	18	No pin
6	D5	Data input	19	No pin
7	D6	Data input (MSB)	20	No pin
8	GND	Ground (Ø V)	21	No pin
9	AØ	Address	22	No pin
10	A1	Address	23	No pin
11	A2	Address	24	No pin
12	$\overline{WR}$	Write	25	No pin
13	V_{CC}	Power supply + 5 V	26	$\overline{CE}$ Chip enable

8

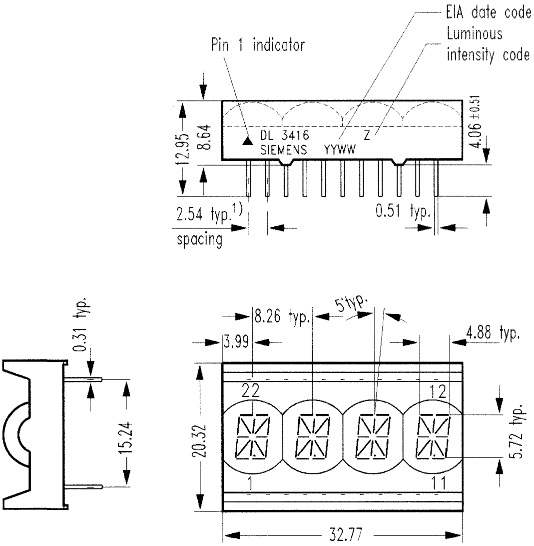
DL 2416 T **Bild/Figure 101**



Pin	Function	
1	$\overline{CE1}$	Chip enable
2	$\overline{CE2}$	Chip enable
3	$\overline{CLR}$	Clear
4	$\overline{CUE}$	Cursor enable
5	$\overline{CU}$	Cursor select
6	$\overline{WR}$	Write
7	A1	Address
8	AØ	Address
9	V_{CC}	Power supply + 5 V
10	GND	Ground (Ø V)
11	DØ	Data input
12	D1	Data input
13	D2	Data input
14	D3	Data input
15	D6	Data input
16	D5	Data input
17	D4	Data input
18	$\overline{BL}$	Display blank

DL 3416

Bild/Figure 102



1) Dimension at seating plane
Tolerance: ±0.25mm

GPX06230

Pin	Function	
1	CE1	Chip enable
2	$\overline{\text{CE2}}$	Chip enable
3	$\overline{\text{CE3}}$	Chip enable
4	$\overline{\text{CE4}}$	Chip enable
5	$\overline{\text{CLR}}$	Clear
6	V_{CC}	Power supply + 5 V
7	AØ	Address
8	A1	Address
9	$\overline{\text{WR}}$	Write
10	$\overline{\text{CU}}$	Cursor select
11	CUE	Cursor enable
12	GND	Ground (Ø V)
13	$\overline{\text{NC}}$	Not connected
14	$\overline{\text{BL}}$	Display blank
15	NC	Not connected
16	DØ	Data input
17	D1	Data input
18	D2	Data input
19	D3	Data input
20	D4	Data input
21	D5	Data input
22	D6	Data input

8

Intelligente LED-Anzeigen
Intelligent LED-Displays

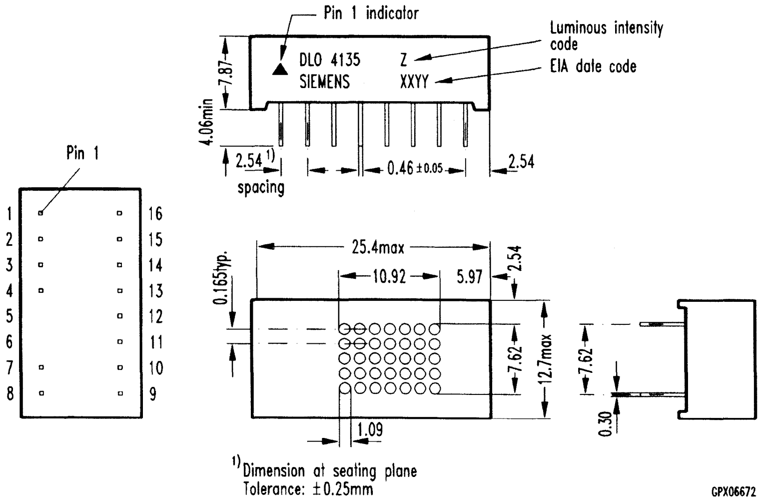
Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
▼ DLO 4135	Q68000-A4297	10				
▼ DLG 4137	Q68000-A4299	10				
⊙ DLO 7135	Q68000-A7157	10				
⊙ DLG 7137	Q68000-A7159	10				

Punktmatrix-Anzeigen mit 96-ASCII-Zeichen
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Typ. Lichtstärke pro Punkt: I_V = 0,5 mcd (bei V_{CC} = 5 V, Durchschnitt)
Betriebstemperatur: – 40 … + 85 °C

Dot-matrix displays with 96 ASCII characters
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Typ. luminous intensity per dot: I_V = 0.5 mcd (at V_{CC} = 5 V, average)
Operating temperature range: – 40 … + 85 °C

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Anzahl der Punkte Number of Dots	Sichtwinkel Viewing Angle Grad Degrees	Zugriff Access Time ns	Bild Fig.
▼ DLO 4135	orange	11	5 × 7	± 75	200	103
▼ DLG 4137	green	11	5 × 7	± 75	200	103
⊙ DLO 7135	orange	17.3	5 × 7	± 75	200	104
⊙ DLG 7137	green	17.3	5 × 7	± 75	200	104

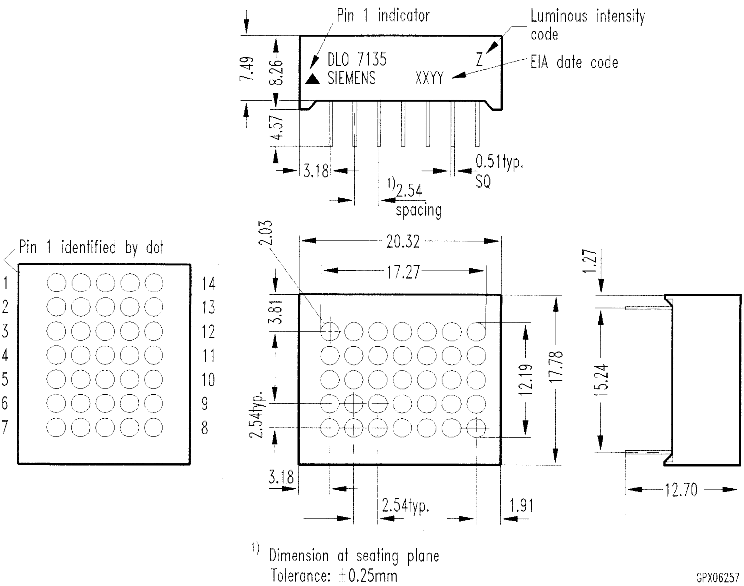
DLO 4135, DLG 4137 **Bild/Figure 103**



Pin	Function	
1	$\overline{LT}$	Lamp test
2	$\overline{WR}$	Write
3	BL1	Brightness
4	BL∅	Brightness
5		No pin
6		No pin
7	$\overline{CE}$	Chip enable
8	GND	Ground (∅ V)
9	D∅	Data input (LSB)
10	D1	Data input
11	D2	Data input
12	D3	Data input
13	D4	Data input
14	D5	Data input
15	D6	Data input (MSB)
16	V_{CC}	Power supply

DLO 7135, DLG 7137

Bild/Figure 104



Pin	Function	
1	V_{CC}	Power supply + 5 V
2	$\overline{LT}$	Lamp test
3	$\overline{CE}$	Chip enable
4	$\overline{WR}$	Write
5	$\overline{BL1}$	Brightness
6	$\overline{BLØ}$	Brightness
7	GND	Ground Ø V
8	DØ	Data input (LSB)
9	D1	Data input
10	D2	Data input
11	D3	Data input
12	D4	Data input
13	D5	Data input
14	D6	Data input (MSB)

Intelligente LED-Anzeigen
Intelligent LED-Displays

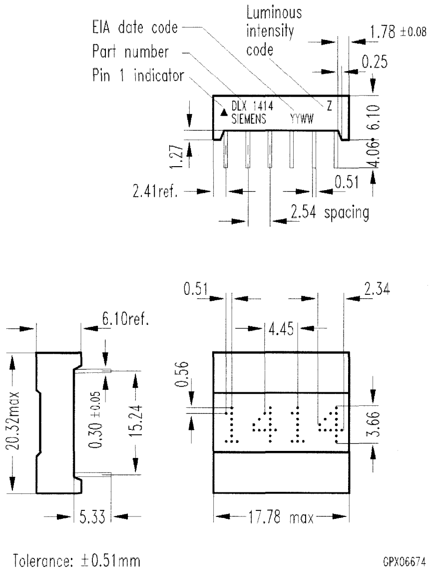
Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ DLR 1414	Q68000-A8091	5				
⊙ DLO 1414	Q68000-A8092	5				
⊙ DLG 1414	Q68000-A8093	5				
⊙ DLR 2416	Q68000-A8094	5				
⊙ DLO 2416	Q68000-A8095	5				
⊙ DLG 2416	Q68000-A8096	5				
⊙ DLR 3416	Q68000-A8097	4				
⊙ DLO 3416	Q68000-A8098	3				
⊙ DLG 3416	Q68000-A8099	3				

Punktmatrix-Anzeigen (DOMINO-Serie) mit 128-ASCII-Zeichen
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Typ. Lichtstärke pro Punkt: I_V = 0,7 mcd bis 0,14 mcd (bei V_{CC} = 5 V, Durchschnitt)
Betriebstemperatur: – 40 … + 85 °C
Direkt austauschbar mit den monolitischen Displays: DL 1414 T, DL 2416 T, DL 3416

Dot-matrix displays (DOMINO series) with 128 ASCII characters
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Typ. luminous intensity per dot: I_V = 0.7 mcd to 0,14 mcd (at V_{CC} = 5 V, average)
Operating temperature range: – 40 … + 85 °C
Directly exchangeable with monolithic displays: DL 1414 T, DL 2416 T, DL 3416

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Anzahl der Punkte Number of Dots	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Zugriff Access Time ns	Bild Fig.
⊙ DLR 1414	red	3.66	5 × 7	± 50/± 75	110	105
⊙ DLO 1414	orange	3.66	5 × 7	± 50/± 75	110	105
⊙ DLG 1414	green	3.66	5 × 7	± 50/± 75	110	105
⊙ DLR 2416	red	5.03	5 × 7	± 50/± 75	110	106
⊙ DLO 2416	orange	5.03	5 × 7	± 50/± 75	110	106
⊙ DLG 2416	green	5.03	5 × 7	± 50/± 75	110	106
⊙ DLR 3416	red	6.86	5 × 7	± 50/± 75	110	107
⊙ DLO 3416	orange	6.86	5 × 7	± 50/± 75	110	107
⊙ DLG 3416	green	6.86	5 × 7	± 50/± 75	110	107

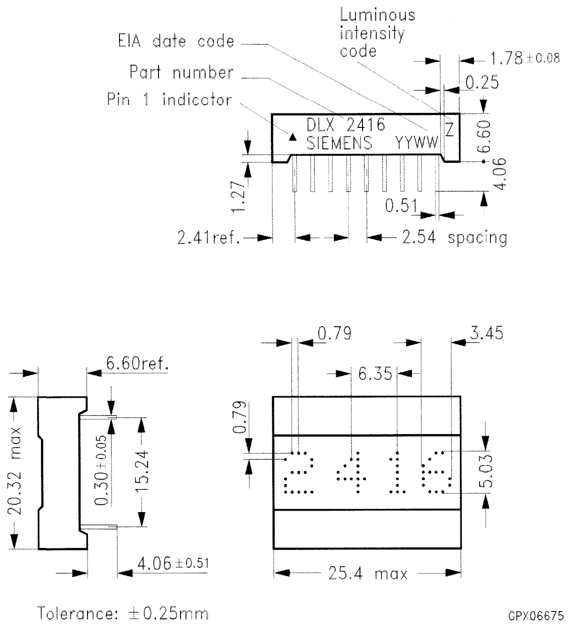
DLR 1414, DLO 1414, DLG 1414 **Bild/Figure 105**



Pin	Function	
1	D5	Data input
2	D4	Data input
3	$\overline{WR}$	Write
4	A1	Address
5	AØ	Address
6	V_{CC}	Power supply + 5 V
7	GND	Ground Ø V
8	DØ	Data input (LSB)
9	D1	Data input
10	D2	Data input
11	D3	Data input
12	D6	Data input (MSB)

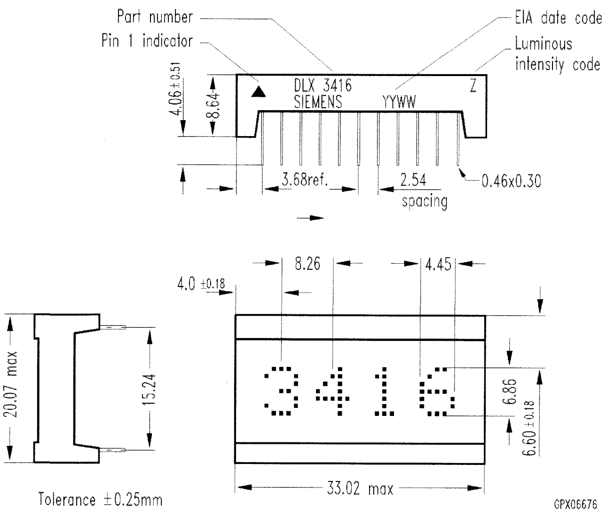
DLR 2416, DLG 2416, DLO 2416

Bild/Figure 106



Pin	Function	
1	$\overline{\text{CE1}}$	Chip enable
2	$\overline{\text{CE2}}$	Chip enable
3	$\overline{\text{CLR}}$	Clear
4	CUE	Cursor enable
5	$\overline{\text{CU}}$	Cursor select
6	$\overline{\text{WR}}$	Write
7	A1	Address
8	AØ	Address
9	V_{CC}	Power supply + 5 V
10	GND	Ground Ø V
11	DØ	Data input
12	D1	Data input
13	D2	Data input
14	D3	Data input
15	D6	Data input
16	D5	Data input
17	D4	Data input
18	$\overline{\text{BL}}$	Display blank

DLR 3416, DLO 3416, DLG 3416 **Bild/Figure 107**



Pin	Function	
1	CE1	Chip enable
2	$\overline{CE2}$	Chip enable
3	$\overline{CE3}$	Chip enable
4	$\overline{CE4}$	Chip enable
5	$\overline{CLR}$	Clear
6	V_{CC}	Power supply + 5 V
7	AØ	Address
8	A1	Address
9	$\overline{WR}$	Write
10	$\overline{CU}$	Cursor select
11	CUE	Cursor enable
12	GND	Ground Ø V
13		Not connected
14	$\overline{BL}$	Display blank
15		Not connected
16	DØ	Data input
17	D1	Data input
18	D2	Data input
19	D3	Data input
20	D4	Data input
21	D5	Data input
22	D6	Data input

Intelligente LED-Anzeigen
Intelligent LED-Displays

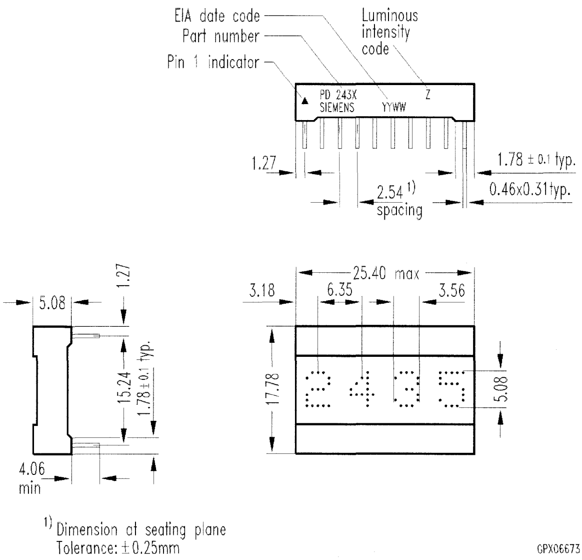
Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ PD 2435	Q68000-A3561	4				
⊙ PD 2436	Q68000-A8366	4				
⊙ PD 2437	Q68000-A3562	4				
⊙ PD 3535	Q68000-A7964	3				
⊙ PD 3536	Q68000-A8365	3				
⊙ PD 3537	Q68000-A7965	3				
⊙ PD 4435	Q68000-A8367	4				
⊙ PD 4436	Q68000-A8368	4				
⊙ PD 4437	Q68000-A8369	4				

Programmierbare Punktmatrix-Anzeigen mit 128-ASCII-Zeichen
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Typ. Lichtstärke pro Punkt: I_V = 0,2 mcd (bei V_{CC} = 5 V, Durchschnitt)
Betriebstemperatur: – 40 … + 85 °C

Programmable dot-matrix displays with 128 ASCII characters
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Typ. luminous intensity per dot: I_V = 0.2 mcd (at V_{CC} = 5 V, average)
Operating temperature range: – 40 … + 85 °C

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Zugriff Access Time ns	Bild Fig.
⊙ PD 2435	orange	5.08	4	5 × 7	± 55/± 65	200	108
⊙ PD 2436	red	5.08	4	5 × 7	± 55/± 65	200	108
⊙ PD 2437	green	5.08	4	5 × 7	± 55/± 65	200	108
⊙ PD 3535	orange	6.86	4	5 × 7	± 55/± 65	200	109
⊙ PD 3536	red	6.86	4	5 × 7	± 55/± 65	200	109
⊙ PD 3537	green	6.86	4	5 × 7	± 55/± 65	200	109
⊙ PD 4435	orange	10.69	4	5 × 7	± 55/± 65	200	110
⊙ PD 4436	red	10.69	4	5 × 7	± 55/± 65	200	110
⊙ PD 4437	green	10.69	4	5 × 7	± 55/± 65	200	110

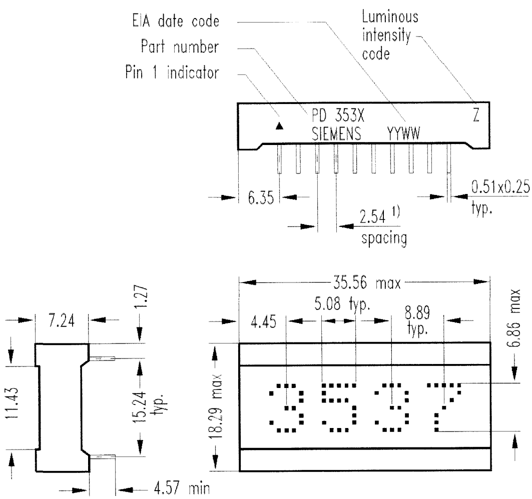
PD 2435, PD 2436, PD 2437 **Bild/Figure 108**



Pin	Function	
1	$\overline{RD}$	Read
2	CLK I/O	Clock I/O
3	$\overline{CLK}$ SEL	Clock select
4	$\overline{RST}$	Reset
5	$\overline{CE1}$	Chip enable
6	$\overline{CEØ}$	Chip enable
7	A2	Address MSB
8	A1	Address
9	AØ	Address LSB
10	GND	Ground
11	$\overline{WR}$	Write
12	D7	Data MSB
13	D6	Data
14	D5	Data
15	D4	Data
16	D3	Data
17	D2	Data
18	D1	Data
19	DØ	Data LSB
20	V_{CC}	Power supply

PD 3535, PD 3536, PD 3537

Bild/Figure 109



1) Dimension at seating plane
Tolerance ±0.25mm

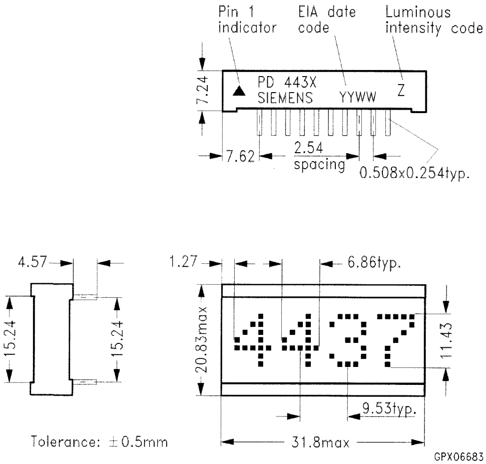
GPX06756

Pin	Function	
1	$\overline{\text{RD}}$	Read
2	CLK I/O	Clock I/O
3	$\overline{\text{CLK}}$ SEL	Clock select
4	$\overline{\text{RST}}$	Reset
5	$\overline{\text{CE1}}$	Chip enable
6	$\overline{\text{CEØ}}$	Chip enable
7	A2	Address MSB
8	A1	Address
9	AØ	Address LSB
10	GND	Ground
11	$\overline{\text{WR}}$	Write
12	D7	Data MSB
13	D6	Data
14	D5	Data
15	D4	Data
16	D3	Data
17	D2	Data
18	D1	Data
19	DØ	Data LSB
20	V_{CC}	Power supply

8

PD 4435, PD 4436, PD 4437

Bild/Figure 110



Pin	Function	
1	$\overline{RD}$	Read
2	CLK I/O	Clock I/O
3	$\overline{CLK}$ SEL	Clock select
4	$\overline{RST}$	Reset
5	$\overline{CE1}$	Chip enable
6	$\overline{CEØ}$	Chip enable
7	A2	Address MSB
8	A1	Address
9	AØ	Address LSB
10	$\overline{GND}$	Ground
11	$\overline{WR}$	Write
12	D7	Data MSB
13	D6	Data
14	D5	Data
15	D4	Data
16	D3	Data
17	D2	Data
18	D1	Data
19	DØ	Data LSB
20	V_{CC}	Power supply

Intelligente LED-Anzeigen
Intelligent LED-Displays

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ PDSP 2110	Q68000-A8474	3				
⊙ PDSP 2111	Q68000-A8503	3				
⊙ PDSP 2112	Q68000-A8504	3				
⊙ PDSP 2113	Q68000-A8505	3				
⊙ PDSP 2114	Q68000-A8533	3				

Programmierbare Punktmatrix-Anzeigen mit 256-ASCII-Zeichen
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Typ. Lichtstärke pro Punkt: I_V = 0,15 mcd bis 0,375 mcd (bei V_{CC} = 5 V, Durchschnitt)
Betriebstemperatur: – 40 … + 85 °C

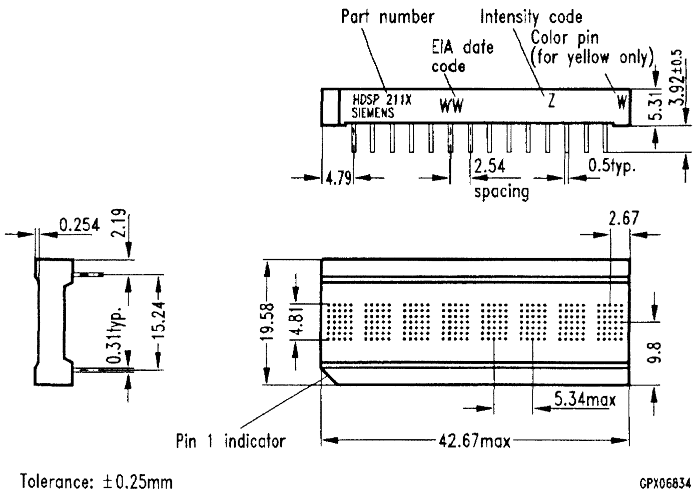
Programmable dot-matrix displays with 256 ASCII characters
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Typ. luminous intensity per dot: I_V = 0.15 mcd to 0.375 mcd (at V_{CC} = 5 V, average)
Operating temperature range: – 40 … + 85 °C

8

Gehäuse: Plastik
Package: Plastic

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Bild Fig.
⊙ PDSP 2110	red	4.80	8	5 × 7	± 55/± 65	111
⊙ PDSP 2111	yellow	4.80	8	5 × 7	± 55/± 65	111
⊙ PDSP 2112	orange	4.80	8	5 × 7	± 55/± 65	111
⊙ PDSP 2113	green	4.80	8	5 × 7	± 55/± 65	111
⊙ PDSP 2114	high efficiency green	4.80	8	5 × 7	± 55/± 65	111

PDSP 2110, -2111, -2112, -2113, -2114 **Bild/Figure 111**



Pin	Function	
1	$\overline{\text{RST}}$	Used for initialization of a display and synchronization of blinking for multiple displays
2	$\overline{\text{FL}}$	Low input accesses the Flash RAM
3	A∅	Address Input LSB
4	A1	Address Input
5	A2	Address Input MSB
6	A3	Mode selector
7		Substr. bias
8		Substr. bias
9		Substr. bias
10		Not connected
11	$\overline{\text{CLK SEL}}$	Selects Internal/External
12	CLK I/O	Outputs master clock or inputs
13	$\overline{\text{WR}}$	A low will write data into the display if $\overline{\text{CE}}$ = 0
14	V_{CC}	Positive power supply input
15	GND	Analog Ground for LED drivers
16	GND	Digital Ground for internal
17	$\overline{\text{CE}}$	Enables access to the display
18		Not connected
19	D∅	Data input (LSB)
20	D1	Data input
21		No pin
22		No pin
23	D2	Data input
24	D3	Data input
25	D4	Data input
26	D5	Data input
27	D6	Data input
28	D7	Data input MSB

Intelligente LED-Anzeigen
Intelligent LED-Displays

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ HDSP 2110 S	Q68000-A8560	3				
⊙ HDSP 2111 S	Q68000-A8561	3				
⊙ HDSP 2112 S	Q68000-A8562	3				
⊙ HDSP 2113 S	Q68000-A8563	3				
⊙ HDSP 2114 S	Q68000-A8564	3				

Programmierbare Punktmatrix-Anzeigen mit 128-ASCII-Zeichen und zusätzlich 16 frei-programmierbaren Zeichen
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Betriebstemperatur: – 40 … + 85 °C

Programmable dot-matrix displays with 128 ASCII characters and 16 user definable characters
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
Power supply V_{CC} = 5.0 V ± 10%
Operating temperature range: – 40 … + 85 °C

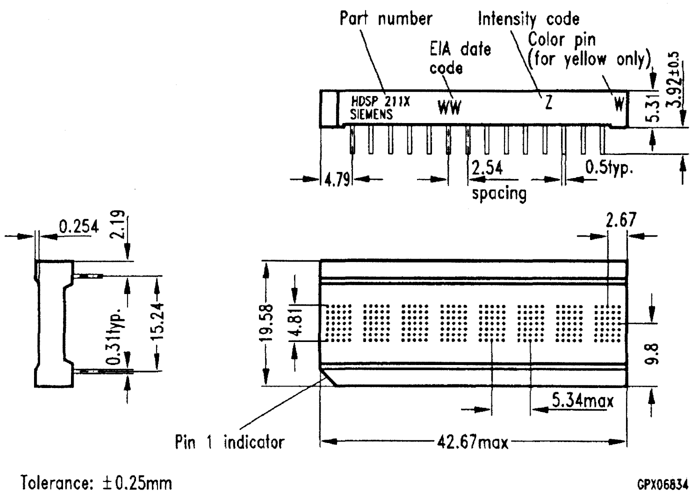
8

Gehäuse: Plastik
Package: Plastic

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Bild Fig.
⊙ HDSP 2110 S	red	4.80	8	5 × 7	± 55/± 65	112
⊙ HDSP 2111 S	yellow	4.80	8	5 × 7	± 55/± 65	112
⊙ HDSP 2112 S	orange	4.80	8	5 × 7	± 55/± 65	112
⊙ HDSP 2113 S	green	4.80	8	5 × 7	± 55/± 65	112
⊙ HDSP 2114 S	high efficiency green	4.80	8	5 × 7	± 55/± 65	112

HDSP 2110 S, -2111 S, -2112 S, -2113 S, -2114 S

Bild/Figure 112



Pin	Function	
1	$\overline{RST}$	Used for initialization of a display and synchronization of blinking for multiple displays
2	$\overline{FL}$	Low input accesses the Flash RAM
3	AØ	Address input LSB
4	A1	Address input
5	A2	Address input MSB
6	A3	Mode selector
7	Substr. bias	Used to bias IC substrate, must
8	Substr. bias	be connected to V_{CC}. Can't be
9	Substr. bias	used to supply power to display
10	A4	Mode selector
11	CLK SEL	Selects internal/external clock source
12	CLK I/O	Outputs master clock or inputs external clock
13	$\overline{WR}$	A low will write data into the display if $\overline{CE}$ is low
14	V_{CC}	Positive power supply input
15	GND	Analog Ground for LED drivers
16	GND	Digital Ground for internal logic
17	$\overline{CE}$	Enables access to the display
18	$\overline{RD}$	A low will read data from the display if $\overline{CE}$ is low
19	DØ	Data input (LSB)
20	D1	Data input
21	No pin	
22	No pin	
23	D2	Data input
24	D3	Data input
25	D4	Data input
26	D5	Data input
27	D6	Data input
28	D7	Data input MSB, selects ROM, page 1 or 2

Intelligente LED-Anzeigen
Intelligent LED-Displays

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ SLG 2016	Q68000-A8642	5				
⊙ SLO 2016	Q68000-A8641	5				
⊙ SLR 2016	Q68000-A8640	5				
⊙ SLY 2016	Q68000-A8643	5				

Programmierbare Punktmatrix-Anzeigen mit 128-ASCII-Zeichen in SLIMLINE-Gehäuse
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Speicher, Dekoder und Treiber
extrem kompakte Gehäuseabmessungen (10 × 20 mm Gehäuseoberfläche)
Versorgungsspannung V_{CC} = 5,0 V ± 10 %
Betriebstemperatur: – 40 … + 85 °C

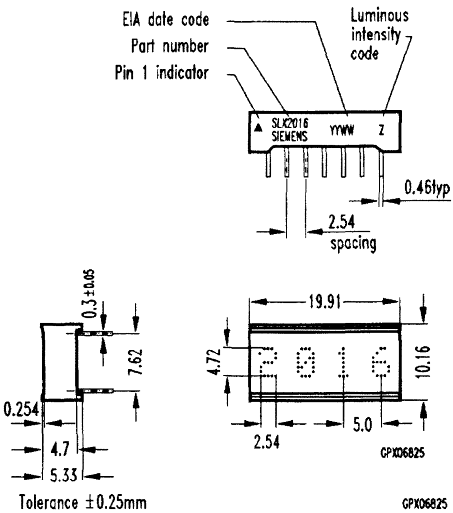
Programmable dot-matrix displays with 128 ASCII characters in SLIMLINE package
Alphanumeric 5 × 7 dot-matrix displays including memory, decoder and driver
optimum display surface efficiency
Power supply V_{CC} = 5.0 V ± 10%
Operating temperature range: – 40 … + 85 °C

8

Gehäuse: Plastik
Package: Plastic

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Bild Fig.
⊙ SLR 2016	red	4.72	4	5 × 7	± 55/± 65	113
⊙ SLO 2016	orange	4.72	4	5 × 7	± 55/± 65	113
⊙ SLG 2016	green	4.72	4	5 × 7	± 55/± 65	113
⊙ SLY 2016	yellow	4.72	4	5 × 7	± 55/± 65	113

SLR 2016, SLO 2016, SLG 2016, SLY 2016 **Bild/Figure 113**



Pin	Function	
1	$\overline{\text{WR}}$	Write
2	A1	Digit Select
3	A0	Digit Select
4	V_{CC}	
5	D0	Data
6	D1	Data
7	D2	Data
8	D3	Data
9	D4	Data
10	D5	Data
11	D6	Data
12	$\overline{\text{BL}}$	Display Blank
13	$\overline{\text{CLR}}$	Clear
14	GND	

Intelligente LED-Anzeigen
Intelligent LED-Displays

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ SCD 5580	Q68000-A8630	4				
⊙ SCD 5581	Q68000-A8631	4				
⊙ SCD 5582	Q68000-A8632	4				
⊙ SCD 5583	Q68000-A8633	4				
⊙ SCD 5584	Q68000-A8634	4				
⊙ SCD 55100	Q68000-A8635	3				
⊙ SCD 55101	Q68000-A8636	3				
⊙ SCD 55102	Q68000-A8637	3				
⊙ SCD 55103	Q68000-A8638	3				
⊙ SCD 55104	Q68000-A8639	3				

Punkt-adressierbare Anzeigen mit 5 × 5 Punktmatrix in SLIMLINE-Gehäuse und mit seriellem Dateneingang
extrem kompakte Gehäuseoberfläche (38,1 × 10 mm)
benötigt bei gleicher Helligkeit 30 % weniger Leistung als eine 5 x 7 Punktmatrix
ROM-lose punktadressierbare Anzeige – ideal für Anwendungen mit benutzerdefinierbaren Zeichen
mit Decoder, Multiplexer LED-Treiber und 200- bzw. 250 bit RAM
8 Helligkeitsniveaus
zu längeren Zeilen und mehrzeiligen Anzeigen aneinanderreihbar

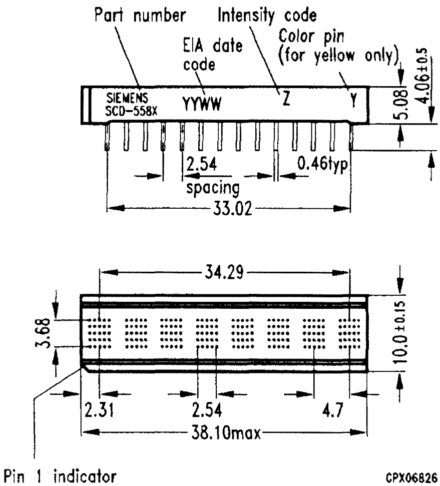
8

Dot addressable intelligent display with 5 × 5 dot matrix (SLIMLINE-package) and serial input
optimum display surface efficiency (display area to package ratio)
low power – 30 % less power than 5 × 7 format
ROMless serial input, dot adressable display – ideal for user defined characters
built-in decoders, multiplexers, LED drivers and a 200- or 250 bit RAM
8 different intensity levels
end-stackable dual-in-line plastic package

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Bild Figure
⊙ SCD 5580	red	3.68	8	5 × 5	± 55/± 65	114
⊙ SCD 5581	yellow	3.68	8	5 × 5	± 55/± 65	114
⊙ SCD 5582	orange	3.68	8	5 × 5	± 55/± 65	114
⊙ SCD 5583	green	3.68	8	5 × 5	± 55/± 65	114
⊙ SCD 5584	HEG*)	3.68	8	5 × 5	± 55/± 65	114
⊙ SCD 55100	red	3.68	10	5 × 5	± 55/± 65	115
⊙ SCD 55101	yellow	3.68	10	5 × 5	± 55/± 65	115
⊙ SCD 55102	orange	3.68	10	5 × 5	± 55/± 65	115
⊙ SCD 55103	green	3.68	10	5 × 5	± 55/± 65	115
⊙ SCD 55104	HEG*)	3.68	10	5 × 5	± 55/± 65	115

*) High efficiency green

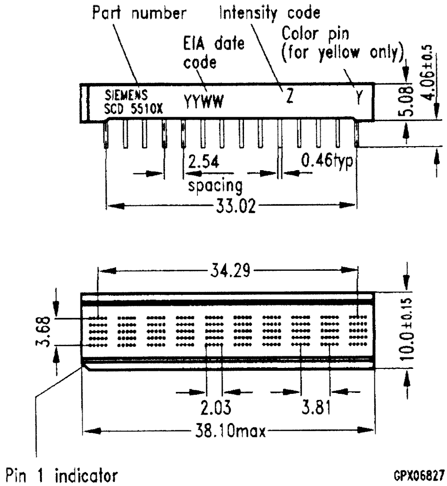
SCD 5580, -5581, -5582, -5583, -5584 **Bild/Figure 114**



Pin	Function	
1	SDCLK	Used for loading data into the 8-bit serial data register on a low to high transition.
2	$\overline{\text{LOAD}}$	Low input enables data clocking into 8-bit serial shift register. When LOAD goes high, the contents of 8-bit serial Shift Register will be decoded.
3	NC	No connection
4	NC	No connection
5	NC	No connection
6	V_{CC}	Power supply/heat sink
7	V_{CC}	Power supply/heat sink
8	V_{CC}	Power supply/heat sink
9	V_{CC}	Power supply/heat sink
10	NC	No connection
11	NC	No connection
12	NC	No connection
13	$\overline{\text{RST}}$	Asynchronous input, when low will clear the Multiplex Counter, User RAM and Data Register. Control Word Register is set to 100 % brightness and the Address Register is set to select Digit 0. The display is blanked
14	GND	Power supply ground
15	CLK I/O	Outputs master clock or inputs external clock
16	$\overline{\text{CLKSEL}}$	H = internal clock, L = external clock
17	NC	No connection
18	NC	No connection
19	V_{CC}	Power supply/heat sink
20	V_{CC}	Power supply/heat sink
21	V_{CC}	Power supply/heat sink
22	V_{CC}	Power supply/heat sink
23	V_{CC}	Power supply/heat sink
24	NC	No connection
25	NC	No connection
26	NC	No connection
27	DATA	Serial data input
28	GND	Power supply ground

SCD 55100, -55101, -55102, -55103, -55104

Bild/Figure 115



Pin	Function	
1	SDCLK	Used for loading data into the 8-bit serial data register on a low to high transition.
2	$\overline{\text{LOAD}}$	Low input enables clocking of data into 8-bit serial shift register. When LOAD goes high the contents of 8-bit serial shift Register will be decoded.
3	No connect	
4	No connect	
5	No connect	
6	V_{CC}	
7	V_{CC}	
8	V_{CC}	
9	V_{CC}	
10	No connect	
11	No connect	
12	No connect	
13	$\overline{\text{RST}}$	Asynchronous input, when low will clear the Multiplex Counter, User RAM and Data Register. Control Word Register is set to logic zero. The display is blanked
14	GND	Power supply ground
15	CLK I/O	Outputs master clock or inputs external clock
16	$\overline{\text{CLKSEL}}$	H = internal clock, L = external clock
17	No connect	
18	No connect	
19	V_{CC}	
20	V_{CC}	
21	V_{CC}	
22	V_{CC}	
23	V_{CC}	
24	No connect	
25	No connect	
26	No connect	
27	Data	Serial data input
28	GND	Power supply ground

LED-Anzeigen mit Schieberegister
LED-Displays with Shift Register

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 299
⊙ HDSP 2000 LP	Q68000-A8131	5				

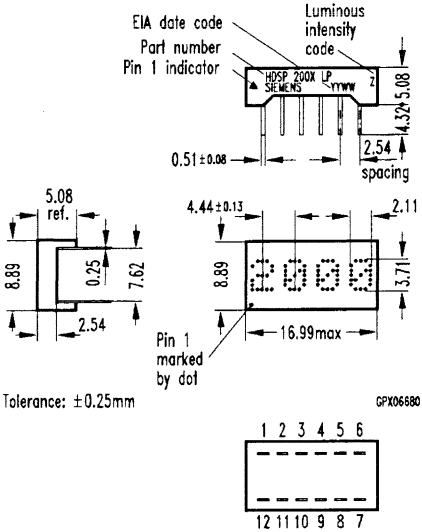
Punktmatrix-Anzeigen (SAMSAN-Serie) mit frei wählbarem Zeichensatz
Alphanumerische 5 × 7-Punktmatrix-Anzeigen mit Schieberegister und Zeilentreibern in CMOS-Technologie, dadurch geringerer Stromverbrauch
Serieller Eingang/paralleler Ausgang
Versorgungsspannung V_{CC} = 5 V_{CC} (– 10 %, + 20 %)
Betriebstemperatur: – 55 … + 100 °C (– 45 … + 85 °C für Plastikgehäuse)

Dot-matrix displays (SAMSAN series), free selection of character set
Alphanumeric 5 × 7 dot-matrix displays with shift register and line drivers in CMOS technology, therefore low energy consumption.
Serial input/parallel output
Power supply V_{CC} = 5 V_{CC} (– 10 %, + 20 %)
Operating temperature range: – 55 … + 100 °C (– 45 … + 85 °C for plastic packages)

Gehäuse: Plastik
Package: Plastic

Typ Type	Farbe Colour	Symbolhöhe Character Height mm	Stellen Digits	Punkte pro Stelle Dots per Digit	Sichtwinkel x/y Achse Viewing Angle x/y Axis Grad Degrees	Bild Fig.
⊙ HDSP 2000 LP	red	3.71	4	5 × 7	± 50/± 75	116

HDSP 2000 LP **Bild/Figure 116**



Pin	Function
1	Column 1
2	Column 2
3	Column 3
4	Column 4
5	Column 5
6	Not connected
7	Data output
8	Brightness control (V_B)
9	Power supply (V_{CC})
10	Clock
11	Ground
12	Data input

8

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

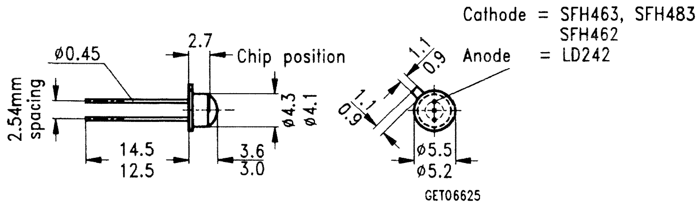
Typ Type	I_e I_F = 100 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	500 bis/to 1999	500 bis/to 2999
GaAs-Lumineszenzdioden; I_R = 0,01 (≤ 1) µA; bei V_R = 5 V **GaAs Infrared Emitters; I_R = 0.01 (≤ 1) µA; at V_R = 5 V**									
				Q62703-					
LD 242	4 … 12.5	± 40	117	-Q151	100				
LD 242-2	4 … 8	± 40	117	-Q198	100				
LD 242-3	6.3 … 12.5	± 40	117	-Q199	100				
LD 242-LE-7800	1 … 2	± 40	117	-Q2157	100				
LD 242-ME-7800	1.6 … 3.2	± 40	117	-Q2158	100				
LD 261	2.0 … 6.3	± 30	118	-Q395	200				
LD 261-4	2 … 4	± 30	118	-Q66	200				
LD 261-5	3.2 … 6.3	± 30	118	-Q67	200				
LD 261-6	≥ 5[2)]	± 30	118	-Q236	200				
LD 271	15 (≥ 10)	± 25	119	-Q148	500				
LD 271-H	≥ 16	± 25	119	-Q256	500				
LD 274	30 … 100	± 10	120	-Q1031	1000				
LD 274-1	30 … 60	± 10	120	-Q1818	1000				
LD 274-2	50 … 100	± 10	120	-Q1819	1000				
LD 274-3	≥ 80	± 10	120	-Q1820	1000				
LD 275	10 … 32	± 18	121	-Q728	1000				
LD 275-1	10 … 20	± 18	121	-Q1919	1000				
LD 275-2	16 … 32	± 18	121	-Q1918	1000				
LD 275-3	≥ 25	± 18	121	-Q1917	1000				
				Q62702-					
SFH 400	20 … 32	± 6	122	-P96	100				
SFH 400-2	20 … 40	± 6	122	-P783	100				
SFH 400-3	≥ 32	± 6	122	-P784	100				
SFH 401	10 … 16	± 15	123	-P97	100				
SFH 401-2	10 … 20	± 15	123	-P786	100				
SFH 401-3	16 … 32	± 15	123	-P787	100				
▼ SFH 401-4	≥ 25	± 15	123	-P2014	100				
SFH 402	2.5 … 4	± 40	124	-P98	100				
SFH 402-2	2.5 … 5	± 40	124	-P789	100				
SFH 402-3	≥ 4	± 40	124	-P790	100				
SFH 405	2.5 … 3.2[3)]	± 16	125	-P835	100				
SFH 405-2	≤ 3.2[3)]	± 16	125	-P856	100				
SFH 405-3	≥ 2.5[3)]	± 16	125	-P857	100				

[1)] Gemessen mit HP Radiant Flux Meter 8334 A (Option 013), Meßabstand ≥ 70 mm; t_p = 20 ms; I_F = 100 mA
Measured with HP radiant flux meter 8334 A (option 013), measuring distance ≥ 70 mm); t_p = 20 ms; I_F = 100 mA

[2)] I_F = 50 mA

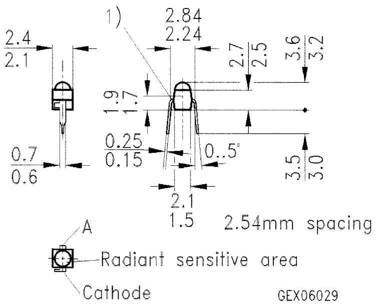
[3)] I_F = 40 mA

LD 242 **Bild/Figure 117**



Approx. weight 0.5 g

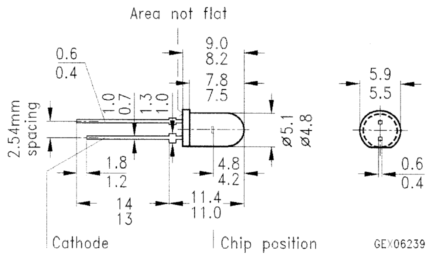
LD 261 **Bild/Figure 118**



1) Detaching area for tools, flash not true to size.

Approx. weight 0.03 g

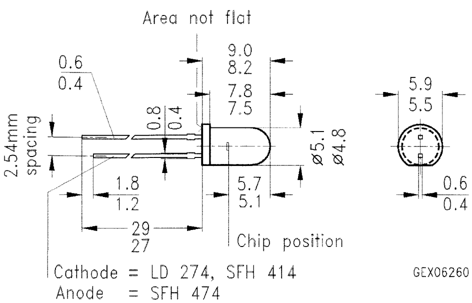
LD 271, LD 271-H **Bild/Figure 119**



Approx. weight 0.5 g

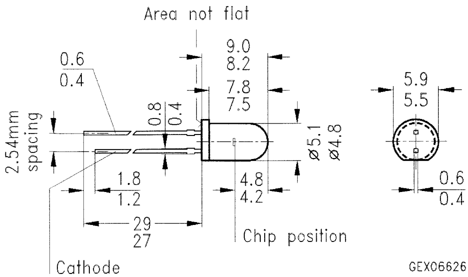
8

LD 274 **Bild/Figure 120**



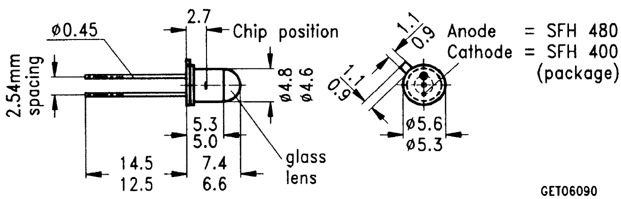
Approx. weight 0.5 g

LD 275 **Bild/Figure 121**



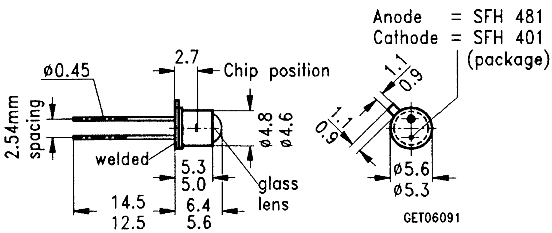
Approx. weight 0.5 g

SFH 400 **Bild/Figure 122**



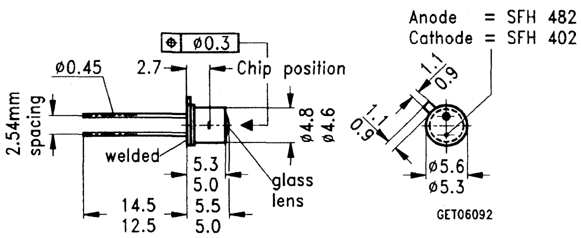
Approx. weight 0.35 g

SFH 401 **Bild/Figure 123**



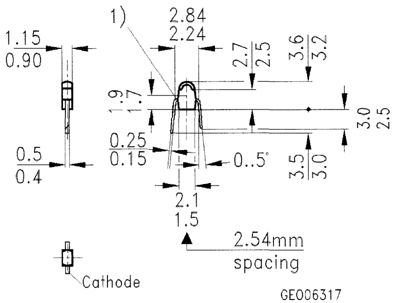
Approx. weight 0.35 g

SFH 402 **Bild/Figure 124**



Approx. weight 0.35 g

SFH 405 **Bild/Figure 125**



1) Detaching area for tools, flash not true to size.

Approx. weight 0.02 g

8

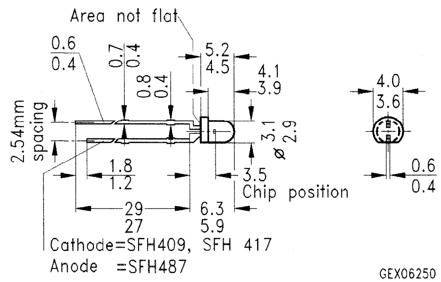
Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

Typ Type	I_e I_F = 100 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 1999	min. bis/to 2999
GaAs-Lumineszenzdioden; I_R = 0,01 (≤ 1) µA; bei V_R = 5 V (Fortsetzung) **GaAs Infrared Emitters; I_R = 0.01 (≤ 1) µA; at V_R = 5 V** (cont'd)							
				Q62702-			
SFH 409	6.3 … 20	± 20	126	-P860	500		
SFH 409-1	6.3 … 12.5	± 20	126	-P1001	500		
SFH 409-2	10 … 20	± 20	126	-P1002	500		
SFH 409-3	≥ 20	± 20	126	-P1003	500		
GaAs/GaAlAs-Lumineszenzdioden; I_R = 0,01 (≤ 1) µA; bei V_R = 5 V **GaAs/GaAlAs Infrared Emitters; I_R = 0.01 (≤ 1) µA; at V_R = 5 V**							
				Q62702-			
SFH 414	25 … 80	± 11	127	-P890	1000		
SFH 414-T	25 … 50	± 11	127	-P1154	500		
SFH 414-U	40 … 80	± 11	127	-P1155	500		
SFH 415	16 … 50	± 17	128	-P296	1000		
SFH 415-S	16 … 32	± 17	128	-P1135	500		
SFH 415-T	25 … 50	± 17	128	-P1136	500		
SFH 415-U	≥ 40	± 17	128	-P1137	500		
SFH 416	6.3 … 20	± 20	129	-P297	1000		
SFH 416-Q	6.3 … 12	± 28	129	-P1138	500		
SFH 416-R	10 … 20	± 28	129	-P1139	500		
SFH 420-N	2.5 … 5	± 60	130	-P1132	500		
				Q62703-			
▼ SFH 421-P	4 … 8	± 80	130	-Q2407	500		

░ = SMD (Surface Mounted Device)

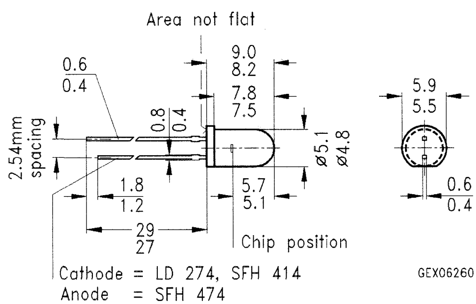
[1] Gemessen mit HP Radiant Flux Meter 8334 A (Option 013), Meßabstand ≥ 70 mm; t_p = 20 ms; I_F = 100 mA;
Measured with HP radiant flux meter 8334 A (option 013), measuring distance ≥ 70 mm); t_p = 20 ms; I_F = 100 mA;

SFH 409 **Bild/Figure 126**



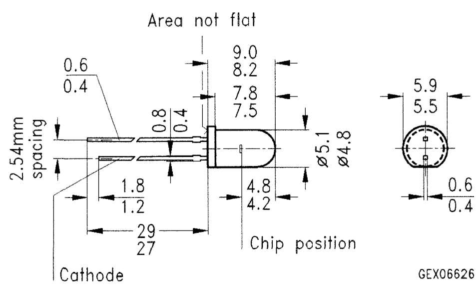
Approx. weight 0.3 g

SFH 414 **Bild/Figure 127**



Approx. weight 0.5 g

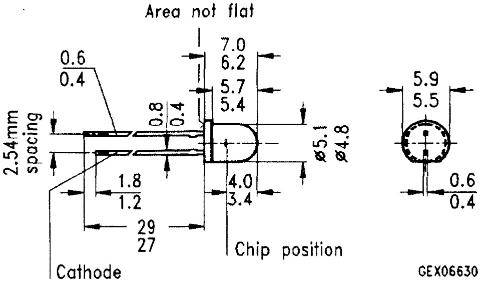
SFH 415 **Bild/Figure 128**



Approx. weight 0.5 g

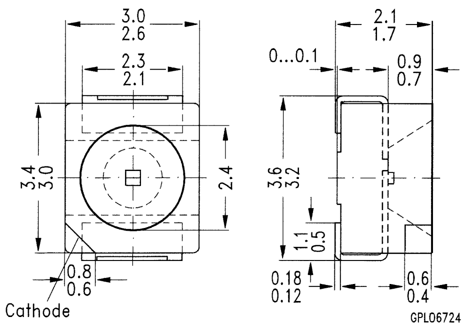
8

SFH 416 **Bild/Figure 129**



Approx. weight 0.4 g

SFH 420, SFH 421 **Bild/Figure 130**



Approx. weight 0.03 g

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

Infrarotindikatorkarte

Bei Bestrahlung leuchtet die aktive Fläche orange auf, wodurch IR-Strahlung des Bereichs 780 – 1300 nm für das menschliche Auge sichtbar wird.

Infrared Indicator

When the active area is exposed to radiation it emits orange light, thus making infrared radiation between 780 and 1300 nm visible to the human eye.

Typ Type	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 49
IR-B2	Q62901-B79	5		

8

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

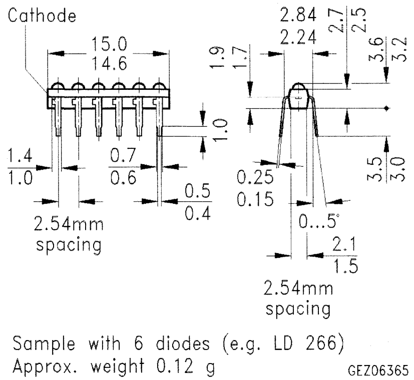
Typ Type	I_e I_F = 50 mA t_p = 20 ms mW/sr	φ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 999
GaAs-Lumineszenzdiodenzeilen; I_R = 0,01 (≤ 1) µA; bei V_R = 3 V **GaAs Infrared Emitter Arrays; I_R = 0.01 (≤ 1) µA; at V_R = 3 V**								
				Q62703-				
LD 260	≥ 2.5 … ≤ 8	± 30	131	-Q78	10			
LD 262	≥ 2.5 … ≤ 8	± 30	131	-Q70	125			
LD 263	≥ 2.5 … ≤ 8	± 30	131	-Q71	50			
LD 264	≥ 2.5 … ≤ 8	± 30	131	-Q72	50			
LD 265	≥ 2.5 … ≤ 8	± 30	131	-Q73	50			
LD 266	≥ 2.5 … ≤ 8	± 30	131	-Q74	20			
LD 267	≥ 2.5 … ≤ 8	± 30	131	-Q75	20			
LD 268	≥ 2.5 … ≤ 8	± 30	131	-Q76	20			
LD 269	≥ 2.5 … ≤ 8	± 30	131	-Q77	20			

Typ Type	I_e I_F = 50 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 999	
GaAlAs-Infrarotstrahler; I_R = 0,01 (≤ 1) µA; bei V_R = 3 V **GaAlAs Infrared Emitters; I_R = 0.01 (≤ 1) µA; at V_R = 3 V**								
				Q62702-				
SFH 462-K E7800[1)]	0.63 … 1.25	± 23	132	-P332	50			
SFH 462-L E7800[1)]	1 … 2	± 23	132	-P1116	50			

[1)] E7800 ≙ Lochblendenmessung
E7800 ≙ Aperture measurement

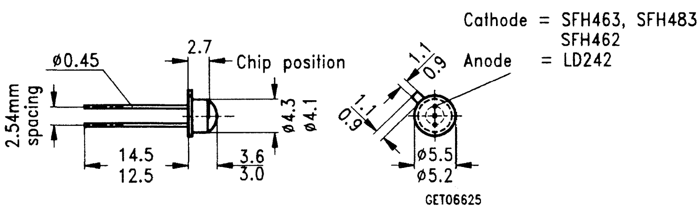
LD 262 … LD 269

Bild/Figure 131



SFH 462

Bild/Figure 132



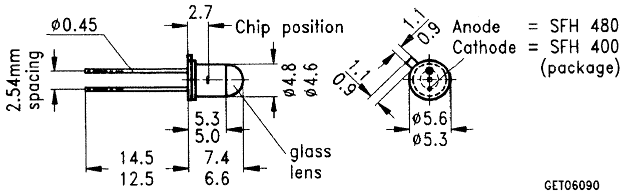
Approx. weight 0.5 g

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

Typ Type	I_e I_F = 100 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 449	500 bis/to 999
GaAlAs-Infrarotstrahler; I_R = 0,01 (≤ 1) μA; bei V_R = 5 V							
GaAlAs Infrared Emitters; I_R = 0.01 (≤ 1) μA; at V_R = 5 V							
				Q62703-			
SFH 480	25 … 80	± 6	133	-Q1087	100		
SFH 480-1	25 … 50	± 6	133	-Q1661	100		
SFH 480-2	40 … 80	± 6	133	-Q1662	100		
SFH 481	10 … 32	± 15	134	-Q1088	100		
SFH 481-1	10 … 20	± 15	134	-Q1664	100		
SFH 481-2	16 … 32	± 15	134	-Q1665	100		
SFH 481-3	≤ 25	± 15	134	-Q1666	100		
SFH 482	3.15 … 10	± 30	135	-Q1089	100		
SFH 482-1	3.15 … 6.3	± 30	135	-Q1667	100		
SFH 482-2	5 … 10	± 30	135	-Q1668	100		
SFH 482-3	≤ 8	± 30	135	-Q1669	100		
SFH 482-L E7800[1)]	1 … 2	± 30	135	-Q2185	100		
SFH 482-M E7800[1)]	1.6 … 3.2	± 30	135	-Q2186	100		

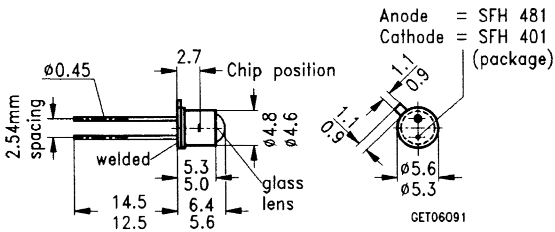
1) E7800 ≙ Lochblendenmessung
E7800 ≙ Aperture measurement

SFH 480 **Bild/Figure 133**



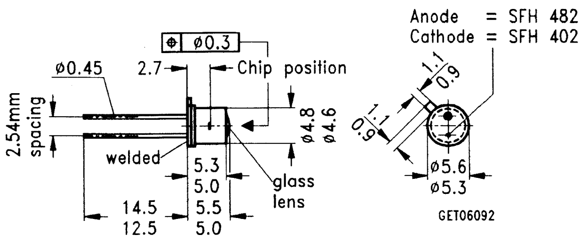
Approx. weight 0.35 g

SFH 481 **Bild/Figure 134**



Approx. weight 0.35 g

SFH 482 **Bild/Figure 135**



Approx. weight 0.35 g

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

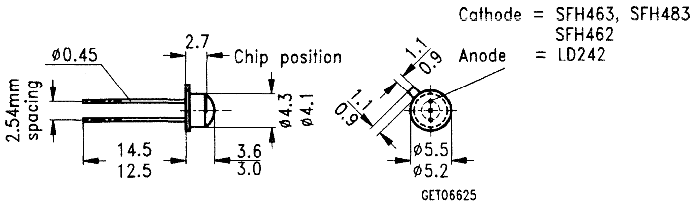
Typ Type	I_e I_F = 100 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999
GaAlAs-Infrarotstrahler; I_R = 0,01 (≤ 1) μA; bei V_R = 5 V (Fortsetzung) **GaAlAs Infrared Emitters; I_R = 0.01 (≤ 1) μA; at V_R = 5 V** (cont'd)							
				Q62703-			
SFH 483-L E7800[1]	1 … 2	± 23	136	-Q2162	100		
SFH 483-M E7800[1]	1.6 … 3.2	± 23	136	-Q2163	100		

Typ Type	I_e I_F = 100 mA t_p = 20 ms mW/sr	φ für/for 0.5 $I_{e\,max}$ Grad Degrees	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 1999
				Q62703-			
SFH 484	50 … 160	± 8	137	-Q1092	500		
SFH 484-1	50 … 100	± 8	137	-Q1755	500		
SFH 484-2	80 … 160	± 8	137	-Q1756	500		
SFH 485	16 … 50	± 20	138	-Q1093	500		
SFH 485-1	16 … 32	± 20	138	-Q1546	500		
SFH 485-2	25 … 50	± 20	138	-Q1547	500		
SFH 485 P	3.15 … 5	± 40	139	-Q516	500		
SFH 487	12.5 … 40	± 20	140	-Q1095	500		
SFH 487-1	12.5 … 25	± 20	140	-Q2173	500		
SFH 487-2	20 … 40	± 20	140	-Q2174	500		
SFH 487 P	2 … 3.15	± 65	141	-Q517	500		

[1] E7800 ≙ Lochblendenmessung
E7800 ≙ Aperture measurement

SFH 483

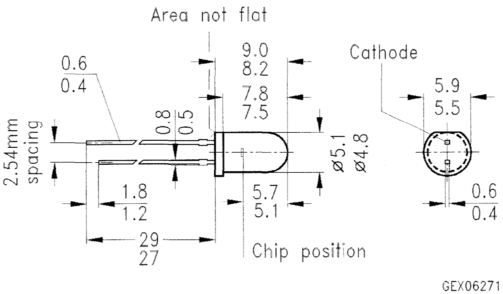
Bild/Figure 136



Approx. weight 0.5 g

SFH 484

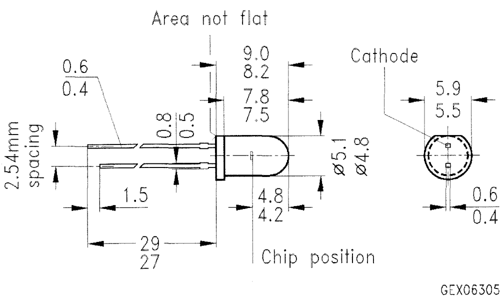
Bild/Figure 137



Approx. weight 0.5 g

SFH 485

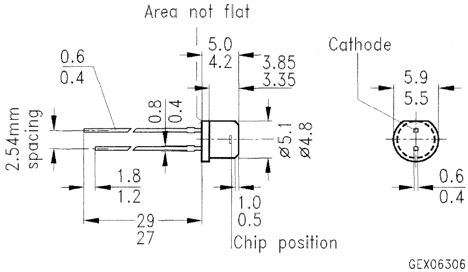
Bild/Figure 138



Approx. weight 0.5 g

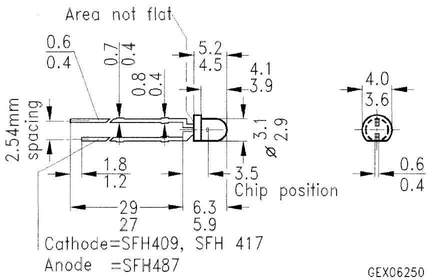
8

SFH 485P **Bild/Figure 139**



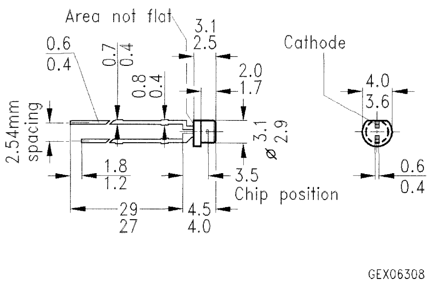
Approx. weight 0.5 g

SFH 487 **Bild/Figure 140**



Approx. weight 0.3 g

SFH 487P **Bild/Figure 141**



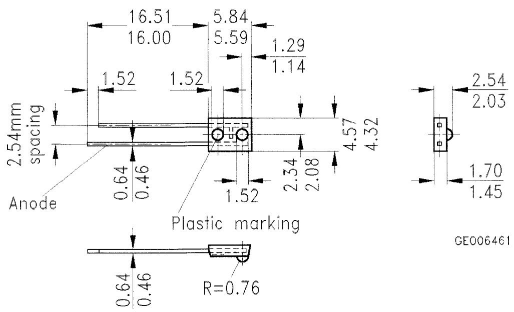
Approx. weight 0.3 g

Infrarot-Emitter (IRED)
Infrared Emitter (IRED)

Typ Type	λ nm	φ Grad Degrees	I_e mW/sr	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999	3000 bis/to 3999
IR-Lumineszenzdioden (Seitenstrahler) IR Emitters (Sidelooker)									
					Q68000-				
IRL 80 A $_{GaAs}$	950	30	≥ 0.4	142	-A7851	400			
IRL 81 A $_{GaAlAs}$	880	25	≥ 1.0	142	-A8000	400			

8

IRL 80A, IRL 81A **Bild/Figure 142**

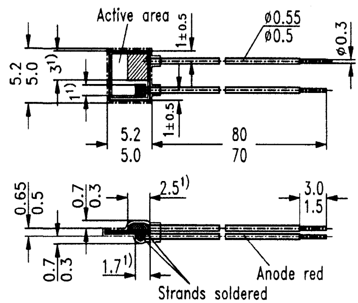


Approx. weight 0.2g

Detektoren
Detectors

Typ Type	S nA lx µA*	$\lambda_{S\ max}$ nm	V_R V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 599	100 bis/to 999
Silizium-Fotoelemente **Silicon Photovoltaic Cells**										
					Q62702-					
BPX 79	170 (≥ 100)	800	1.0	143	-P51	20				
					Q60215-					
BPY 11 P IV	55 (≥ 47)	850	1.0	144	-Y111-S4	50				
BPY 11 P V	60 (≥ 56)	850	1.0	144	-Y111-S5	50				
BPY 47 P	1400 (≥ 900)	850	1.0	145	-Y66	10				
BPY 48 P	500 (≥ 350)	850	1.0	146	-Y65	10				
BPY 63 P	650 (≥ 450)	850	1.0	147	-Y63-S1	10				
BPY 64 P	250 (≥ 180)	850	1.0	148	-Y67	25				
					Q62607-					
TP 60 P	1 (≥ 0.7)*	900	1.0	149	-S60	5				
TP 61 P	1 (≥ 0.7)*	900	1.0	150	-S61	6				

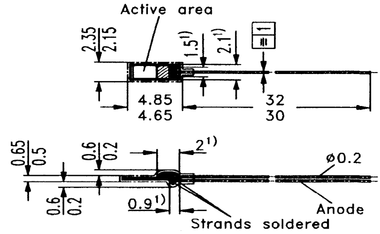
BPX 79 **Bild/Figure 143**



[1)] Max. solder areas on front and back side

Approx. weight 0.2 g GS006631

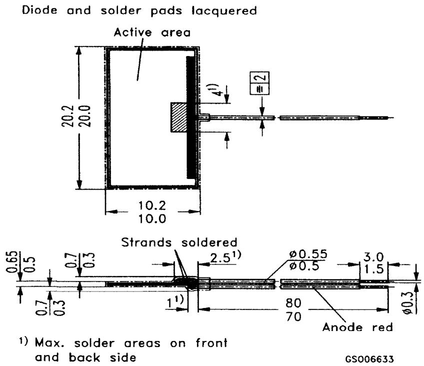
BPY 11P **Bild/Figure 144**



[1)] Max. solder areas on front and back side

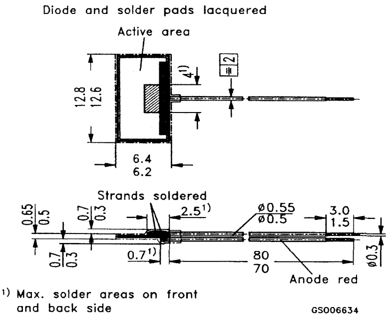
Approx. weight 0.1 g GS006032

BPY 47P — Bild/Figure 145



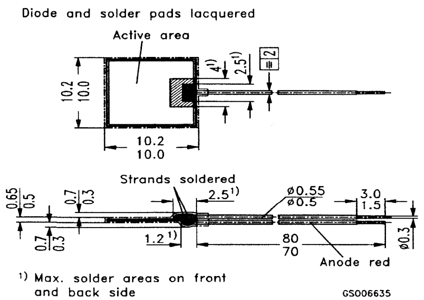
Approx. weight 0.3 g

BPY 48P — Bild/Figure 146



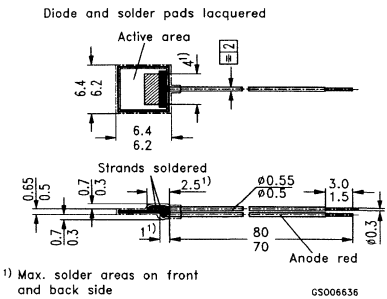
Approx. weight 0.25 g

BPY 63P — Bild/Figure 147



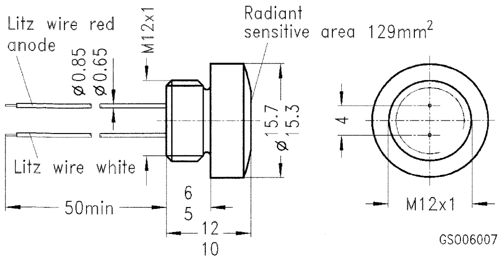
Approx. weight 0.25 g

BPY 64P — Bild/Figure 148



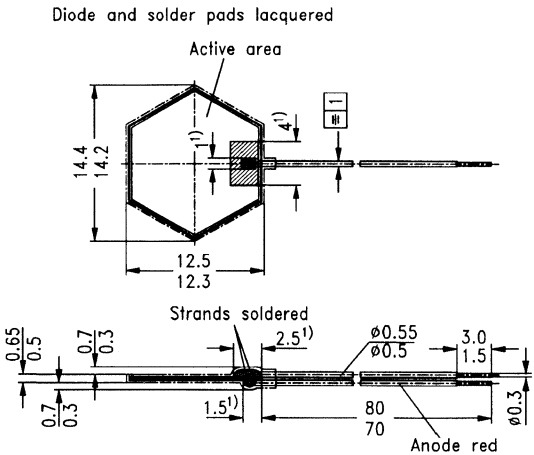
Approx. weight 0.2 g

TP 60 P **Bild/Figure 149**



Approx. weight 1.8 g

TP 61 P **Bild/Figure 150**



1) Max. solder areas on front and back side

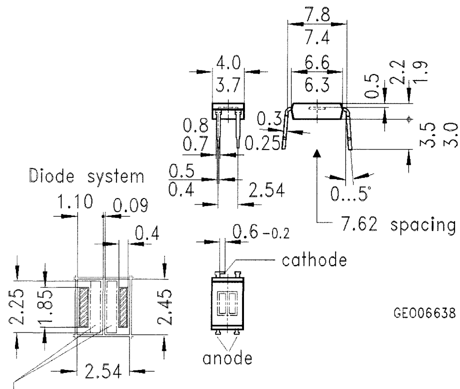
Approx. weight 0.3 g

Detektoren
Detectors

Typ Type	S nA Ix µA*	$\lambda_{S\,max}$ nm	V_R V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 999
Silizium-Differential-Fotodiode **Silicon Differential Photodiode**									
					Q62702-				
BPX 48	32 (≥ 15)	850	10	151	-P17-S1	20			
SFH 221 S	24 (≥ 15)	900	10	152	-P270	10			
SFH 234 S	1.85 (≥ 1.2)	800	20	153	-P211	10			
SFH 244 S	7.4 (≥ 4.8)	800	20	154	-P212	10			

Typ Type	S nA Ix µA*	$\lambda_{S\,max}$ nm	V_R V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499	500 bis/to 999
Silizium-Fotodioden **Silicon Photodiodes**										
					Q62702-					
BP 104	17 (≥ 12.5)	950	20	155	-P84	250				
BP 104 BS	25 (≥ 15)*	950	32	156	-P917	250				
BPW 21	9 (≥ 5.5)	550	10	157	-P885	40				
BPW 32	10 (≥ 7)	800	7	158	-P74	40				
BPW 33	50 (≥ 35)	800	7	159	-P76	25				
BPW 34	70 (≥ 50)	850	32	159	-P73	250				
BPW 34 B	75	850	32	159	-P945	50				
BPW 34 F	25 (≥ 15)*	950	20	159	-P929	250				
BPW 34 FA	25 (≥ 15)*	880	32	159	-P1129	250				
BPX 60	50 (≥ 35)	850	32	160	-P54	40				
					Q62705-					
BPX 61	70 (≥ 50)	850	32	160	-P25	40				
					Q62702-					
BPX 63	10 (≥ 0.8)	800	7	161	-P55	40				
BPX 65	10 (≥ 7)	850	57	162	-P27	20				
BPX 66	9 (≥ 5)	850	50	162	-P80	20				
BPX 90	40 (≥ 25)	850	32	163	-P47	50				
BPX 90 F	13 (≥ 8)*	950	32	163	-P928	50				
BPX 91 B	50 (≥ 35)	850	32	164	-P48-S	50				
BPX 92	9.5 (≥ 4)	830	32	165	-P49	50				
						Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499	500 bis/to 599
BPY 12	≥ 100	850	20	166	Q62702-P9	5				
BPY 12 H1	180 (≥ 100)*	920	20	167	Q62702-P1029	2				

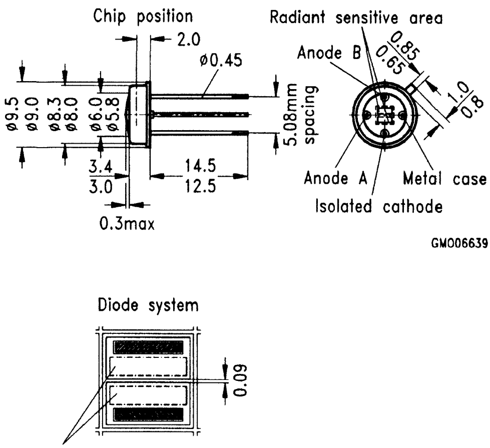
BPX 48 **Bild/Figure 151**



Radiant sensitive area 2.0x1.64mm

Approx. weight 0.1 g

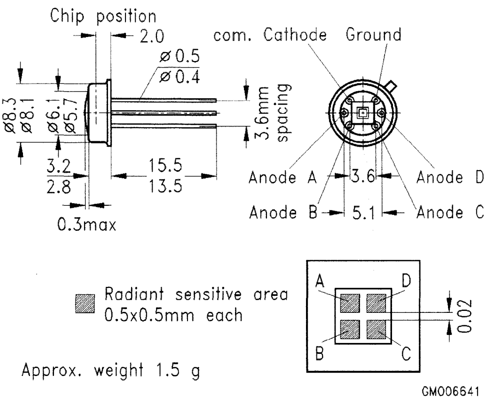
SFH 221 S **Bild/Figure 152**



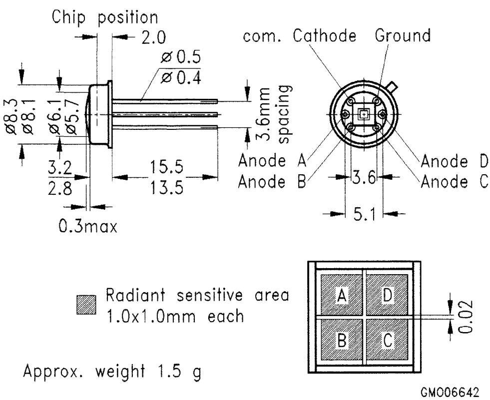
Radiant sensitive area 2.0x1.67 each

Approx. weight 1.5 g

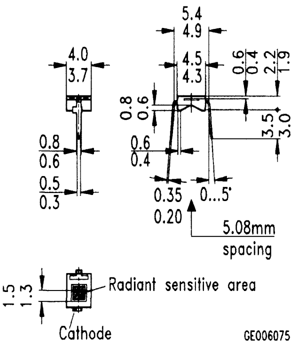
SFH 234 S **Bild/Figure 153**



SFH 244 S **Bild/Figure 154**

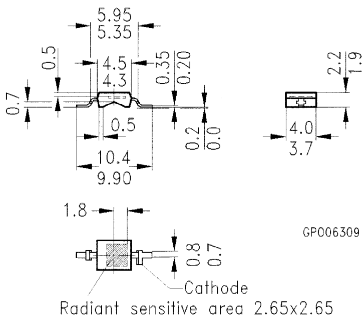


BP 104 **Bild/Figure 155**



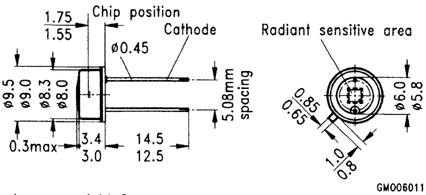
Approx. weight 0.1 g

BP 104 BS **Bild/Figure 156**



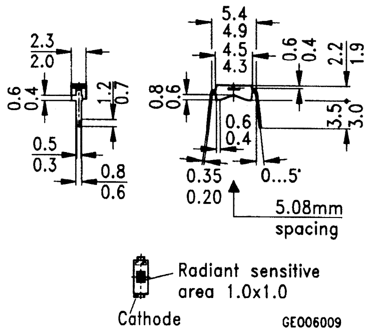
Approx. weight 0.1 g

BPW 21 — Bild/Figure 157



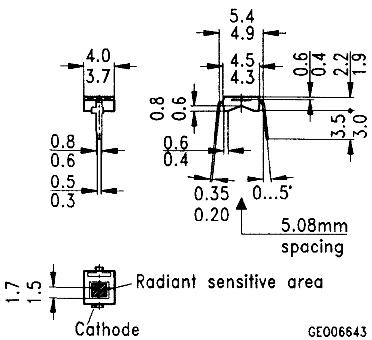
Approx. weight 2 g

BPW 32 — Bild/Figure 158



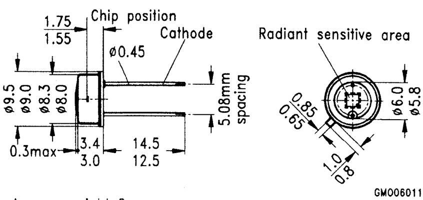
Approx. weight 0.05 g

BPW 33 / BPW 34/-B/-F/-FA — Bild/Figure 159



Approx. weight 0.1 g

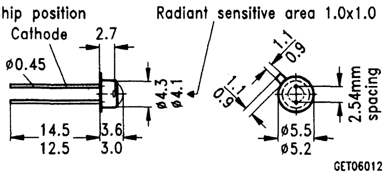
BPX 60, BPX 61 — Bild/Figure 160



Approx. weight 2 g

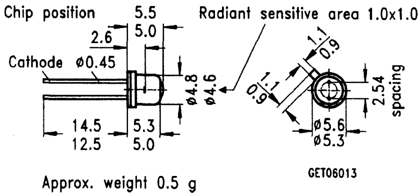
8

BPX 63 **Bild/Figure 161**



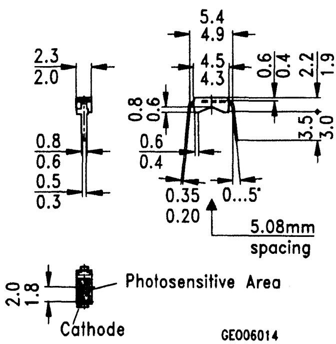
Approx. weight 0.5 g

BPX 65, BPX 66 **Bild/Figure 162**



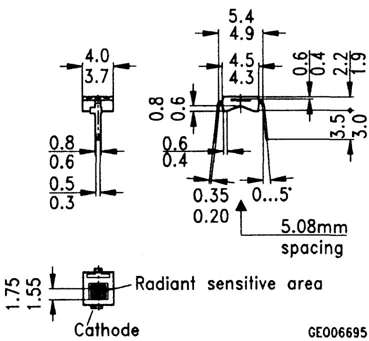
Approx. weight 0.5 g

BPX 90, BPX 90 F **Bild/Figure 163**



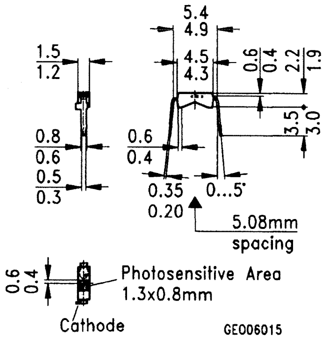
Approx. weight 0.05 g

BPX 91 B **Bild/Figure 164**



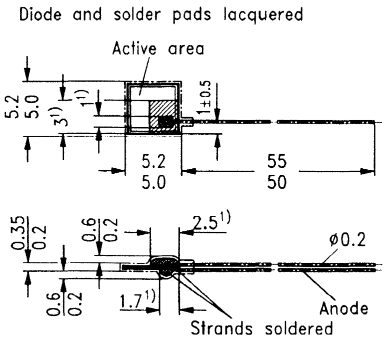
Approx. weight 0.1 g

BPX 92 **Bild/Figure 165**



Approx. weight 0.03 g

BPY 12 **Bild/Figure 166**

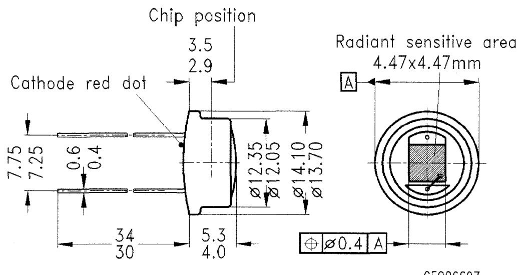


1) Max. solder areas on front and back side

Approx. weight 0.2 g GS006016

8

BPY 12 H1 **Bild/Figure 167**



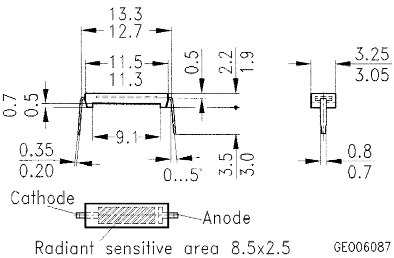
Approx. weight 1.2 g

Detektoren
Detectors

Typ Type	S nA Ix µA*	$\lambda_{S\ max}$ nm	V_R V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499	500 bis/to 999	500 bis/to 1999
Silizium-Fotodioden **Silicon Photodiodes**											
					Q62702-						
SFH 100	175 (≥ 150)	850	7	168	-F595	5					
SFH 200	20 (≥ 14)	800	5	169	-P86	50					
SFH 205	25 (≥ 15)*	950	20	170	-P102	250					
SFH 205 Q2	25 (≥ 15)*	950	32	172	-P896	250					
SFH 206	25 (≥ 15)*	950	20	173	-P128	250					
SFH 206 K	80 (≥ 50)	850	32	173	-P129	250					
SFH 207 A	850 (≥ 750)	850	15	171	-P863	2					
SFH 212	25 (≥ 20)	800	7	174	-P145	40					
SFH 216	50 (≥ 35)	850	50	175	-P936	20					
SFH 219	7 (≥ 5)	850	7	176	-P948	40					
SFH 225	17 (≥ 12.5)	950	20	177	-P1051	250					
SFH 217	9.5 (≥ 5)	850	30	178	-P942	250					
SFH 217 F	3 (≥ 1.8)*	900	30	178	-P947	250					
SFH 229	28 (≥ 18)	860	20	179	-P215	500					
SFH 229 F	10 (≥ 5.4)*	900	20	179	-P216	500					
SFH 229 P	3.1 (≥ 2.3)	860	20	180	-P217	250					
SFH 229 PF	1.0 (≥ 0.7)*	900	20	180	-P218	250					
SFH 235	24 (≥ 20)*	900	32	181	-P273	250					
SFH 263	10 (≥ 8)	850	7	182	-P1081	50					
SFH 291	3 (≥ 2)	850	10	183	-P1038	5					
SFH 2030	80 (≥ 50)	850	30	184	-P955	250					
SFH 2030 F	25 (≥ 15)*	900	30	184	-P956	250					

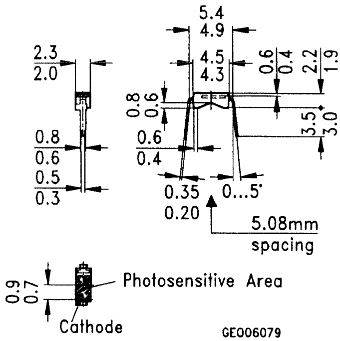
Typ Type	S nA Ix µA*	$\lambda_{S\ max}$ nm	V_R V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 999
Germanium-Fotodioden **Germanium Photodiodes**									
					Q62702-				
SFH 231	13 (≥ 8)	1500	15	185	-P1052	2			
SFH 232	1.7 (≥ 1.2)	1500	15	186	-P1053	2			
SFH 233	12 (≥ 9)	1500	15	187	-P1054	1			

SFH 100 — Bild/Figure 168



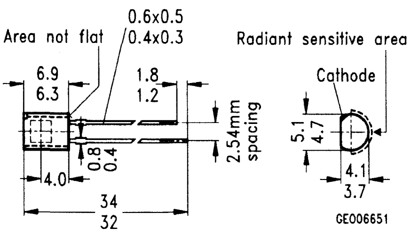
Approx. weight 0.15 g

SFH 200 — Bild/Figure 169



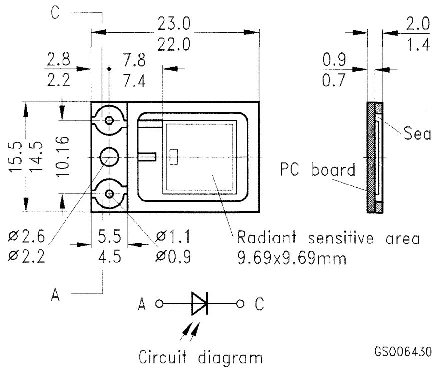
Approx. weight 0.05 g

SFH 205 — Bild/Figure 170



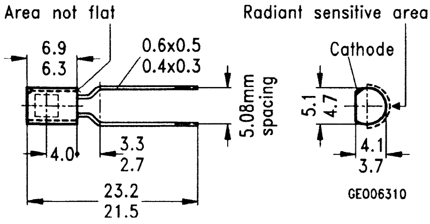
Approx. weight 0.25 g

SFH 207A — Bild/Figure 171



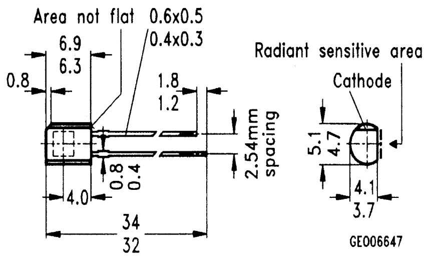
Approx. weight 1 g

SFH 205 Q2 **Bild/Figure 172**



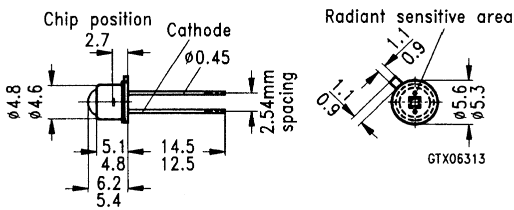
Approx. weight 0.25 g

SFH 206, SFH 206 K **Bild/Figure 173**



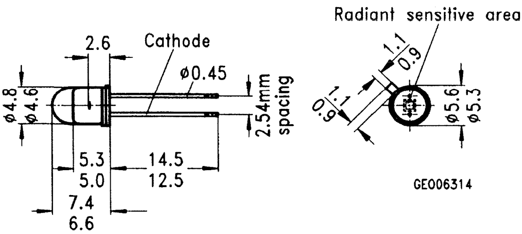
Approx. weight 0.25 g

SFH 212 **Bild/Figure 174**



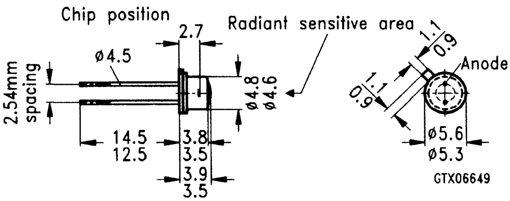
Approx. weight 0.5 g

SFH 216 **Bild/Figure 175**



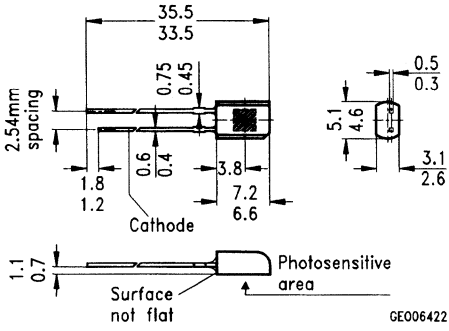
Approx. weight 0.5 g

SFH 219 **Bild/Figure 176**



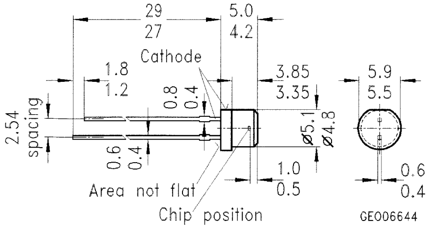
Approx. weight 0.5 g

SFH 225 **Bild/Figure 177**



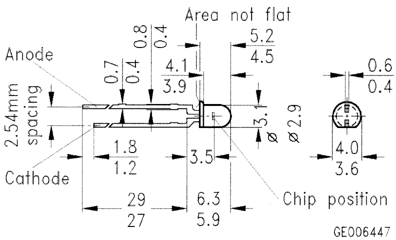
Approx. weight 0.25 g

SFH 217 / -F **Bild/Figure 178**



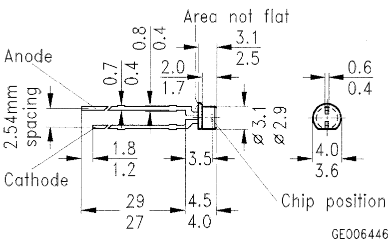
Approx. weight 0.4 g

SFH 229 / -F **Bild/Figure 179**



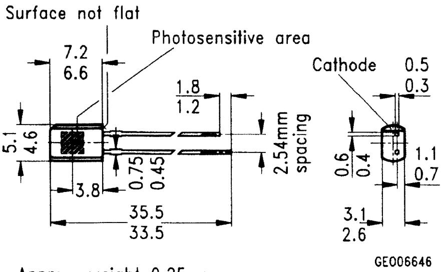
Approx. weight 0.25 g

SFH 229 P / -PF **Bild/Figure 180**



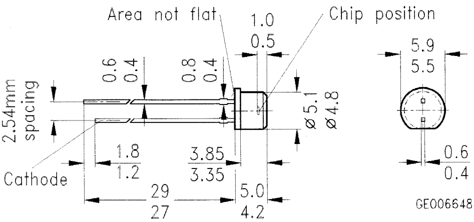
Approx. weight 0.25 g

SFH 235 **Bild/Figure 181**



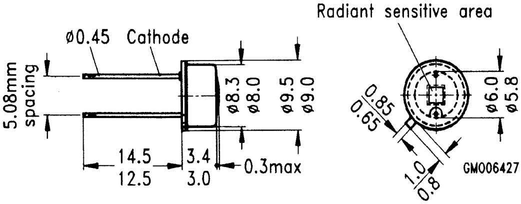
Approx. weight 0.25 g

SFH 263 **Bild/Figure 182**



Approx. weight 0.25 g

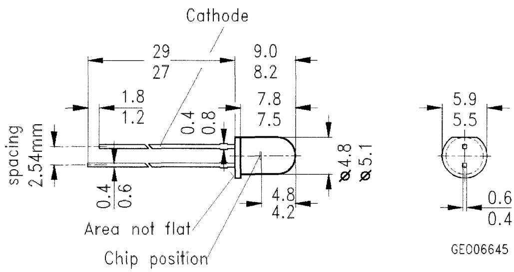
SFH 291 **Bild/Figure 183**



Approx. weight 1.5 g

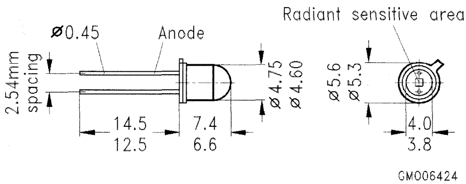
8

SFH 2030/-F **Bild/Figure 184**

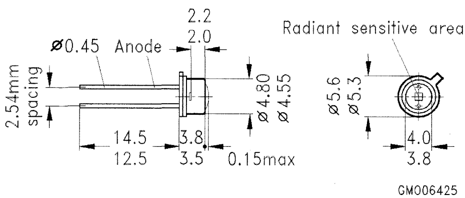


Approx. weight 0.2 g

SFH 231 **Bild/Figure 185**

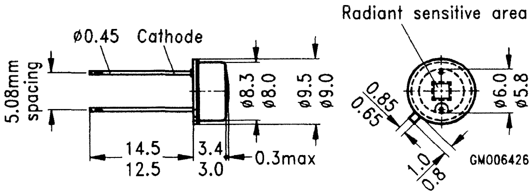


SFH 232 **Bild/Figure 186**



SFH 233

Bild/Figure 187



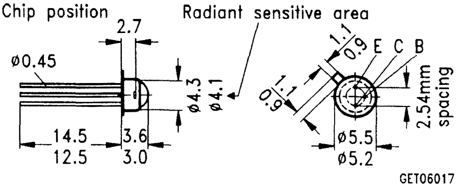
Approx. weight 1.5 g

8

Detektoren
Detectors

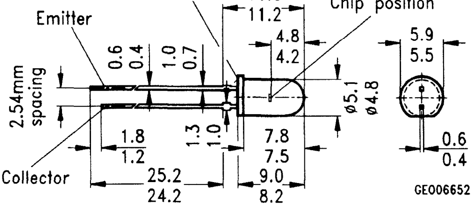
Typ Type	V_{CE} V	I_p V_{CE} = 5 V E_e = 0.5 mW 950 nm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	500 bis/to 1999
Silizium-Fototransistoren **Silicon Phototransistors**								
				Q62702				
BP 103	50	0.08 … 0.5	188	-P75	100			
BP 103-2	50	0.08 … 0.16	188	-P79-S1	100			
BP 103-3	50	0.125 … 0.25	188	-P79-S2	100			
BP 103-4	50	0.2 … 0.4	188	-P79-S4	100			
BP 103-5	50	0.32 … 0.63	188	-P781	100			
BP 103-6	50	≥ 0.5	188	-P768	100			
BP 103 B	35	0.63 … 1.6	189	-P1189	500			
BP 103 B-2	35	0.63 … 1.25	189	-P85-S2	500			
BP 103 B-3	35	1.0 … 2.0	189	-P85-S3	500			
BP 103 B-4	35	≥ 1.6	189	-P85-S4	500			
BPX 38	50	0.2 … 1.25	190	-P15	100			
BPX 38-2	50	0.2 … 0.4	190	-P15-S2	100			
BPX 38-3	50	0.32 … 0.63	190	-P15-S3	100			
BPX 38-4	50	0.5 … 1.0	190	-P15-S4	100			
BPX 38-5	50	0.8 … 1.6	190	-P15-S5	100			
BPX 43	50	0.8 … 5	191	-P16	100			
BPX 43-2	50	0.8 … 1.6	191	-P16-S2	100			
BPX 43-3	50	1.25 … 2.5	191	-P16-S3	100			
BPX 43-4	50	2.0 … 4.0	191	-P16-S4	100			
BPX 43-5	50	3.2 … 6.3	191	-P16-S5	100			
BPX 81	32	0.25 … 1.25	192	-P20	200			
BPX 81-2	32	0.25 … 0.5	192	-P43-S2	200			
BPX 81-3	32	0.4 … 0.8	192	-P43-S3	200			
BPX 81-4	32	0.63 … 1.25	192	-P43-S4	200			
				Q60215-				
BPY 62	50	0.63 … 3.2	191	-Y62	100			
BPY 62-2	50	0.63 … 1.25	191	-Y1111	100			
BPY 62-3	50	1.0 … 2.0	191	-Y1112	100			
BPY 62-4	50	1.25 … 2.5	191	-Y1113	100			
				Q62702-				
BPY 62-5	50	2.0 … 4.0	191	-P1113	100			

BP 103 **Bild/Figure 188**



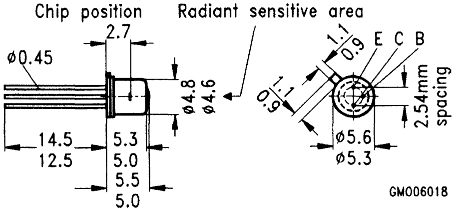
Approx. weight 0.5 g

BP 103 B **Bild/Figure 189**



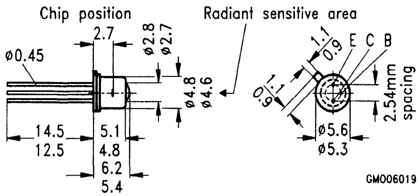
Approx. weight 0.2 g

BPX 38 **Bild/Figure 190**



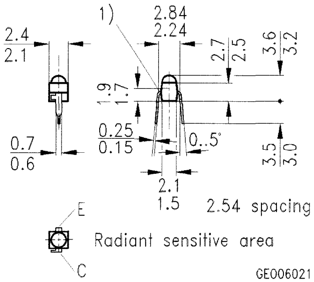
Approx. weight 1.0 g

BPX 43, BPY 62 **Bild/Figure 191**



Approx. weight 1.0 g

BPX 81 **Bild/Figure 192**



1) Detaching area for tools, flash not true to size.

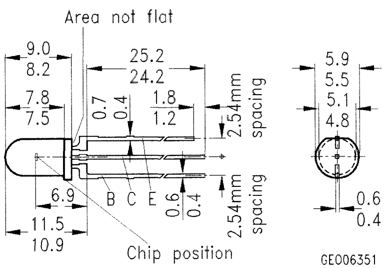
Approx. weight 0.03 g

Detektoren
Detectors

Typ Type	V_{CE} V	I_p V_{CE} = 5 V E_e = 0.5 mW 950 nm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 1999
Silizium-Fototransistoren Silicon Phototransistors							
				Q62702			
SFH 303	50	5.2 … 13.1	193	-P957	250		
SFH 303-2	50	5.2	193	-P228	250		
SFH 303-3	50	8.4	193	-P229	250		
SFH 303-4	50	13.1	193	-P230	250		
SFH 303 F	50	1.0 … 3.2	193	-P958	250		
SFH 303 F-2	50	1.0 … 2.0	193	-P222	250		
SFH 303 F-3	50	1.6 … 3.2	193	-P223	250		
SFH 303 F-4	50	≥ 3.2	193	-P224	250		

8

SFH 303, SFH 303 F **Bild/Figure 193**



Approx. weight 0.2 g

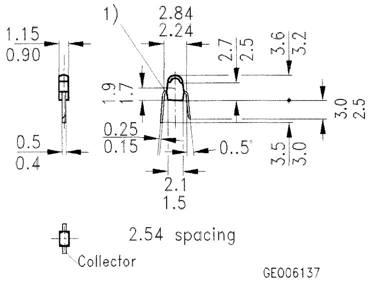
Detektoren
Detectors

Typ Type	V_{CE} V	I_p V_{CE} = 5 V E_e = 0.5 mW 950 nm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 1999
Silizium-Fototransistoren Silicon Phototransistors							
				Q62702-			
SFH 305	32	0.25 … 0.8	194	-P836	100		
SFH 305-2	32	0.25 … 0.5	194	-P848	100		
SFH 305-3	32	0.4 … 0.8	194	-P849	100		
SFH 309	35	0.63 … 2.5	195	-P859	500		
SFH 309-3	35	0.63 … 1.25	195	-P997	500		
SFH 309-4	35	1.0 … 2.0	195	-P998	500		
SFH 309-5	35	1.6 … 3.2	195	-P999	500		
SFH 309-6	35	≥ 2.5	195	-P1000	500		
SFH 309 F	35	0.4 … 3.2	195	-P941	500		
SFH 309 F-2	35	0.4 … 0.8	195	-P174	500		
SFH 309 F-3	35	0.63 … 1.25	195	-P176	500		
SFH 309 F-4	35	1.0 … 2.0	195	-P178	500		
SFH 309 F-5	35	1.6 … 3.2	195	-P180	500		
SFH 309 P	35	0.063 … 0.3	196	-P245	500		
SFH 309 P-2	35	0.063 … 0.125	196	-P231	500		
SFH 309 P-3	35	0.1 … 0.2	196	-P232	500		
SFH 309 P-4	35	0.16 … 0.3	196	-P233	500		
SFH 309 PF	35	0.063 … 0.32	196	-P246	500		
SFH 309 PF-2	35	0.063 … 0.125	196	-P235	500		
SFH 309 PF-3	35	0.1 … 0.2	196	-P236	500		
SFH 309 PF-4	35	0.16 … 0.32	196	-P237	500		
SFH 317	50	0.16 … 0.4	197	-P959	250		
SFH 317-2	50	0.16 … 0.32	197	-P225	250		
SFH 317-3	50	0.25 … 0.5	197	-P226	250		
SFH 317-4	50	≥ 0.4	197	-P227	250		
SFH 317 F	50	0.16 … 0.4	197	-P960	250		
SFH 317 F-2	50	0.16 … 0.32	197	-P219	250		
SFH 317 F-3	50	0.25 … 0.5	197	-P220	250		
SFH 317 F-4	50	≥ 0.4	197	-P221	250		

					Stck. Pcs. Min.	min. bis/to 499	500 bis/to 2999
				Q62702-			
SFH 320-2	35	0.016 … 0.032	198	-P389	500		
SFH 320-3	35	≥ 0.025	198	-P390	500		
SFH 320 F-2	35	0.016 … 0.032	198	-P392	500		
SFH 320 F-3	35	≥ 0.025	198	-P393	500		

= SMD (Surface Mounted Device)

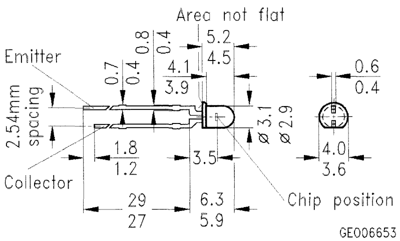
SFH 305 **Bild/Figure 194**



1) Detaching area for tools, flash not true to size.

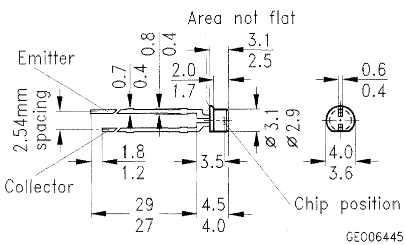
Approx. weight 0.02 g

SFH 309, SFH 309 F **Bild/Figure 195**



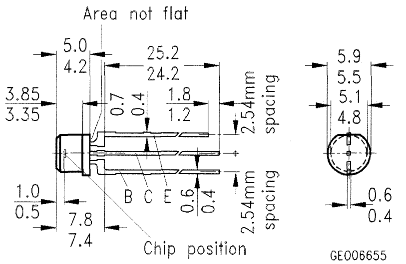
Approx. weight 0.3 g

SFH 309 P, SFH 309 PF **Bild/Figure 196**



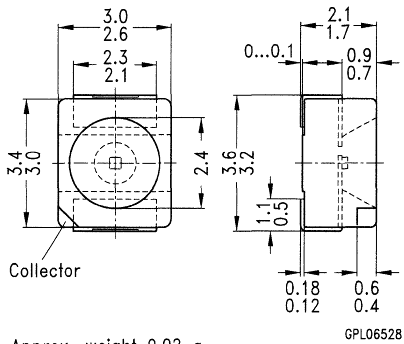
8

SFH 317, SFH 317 F **Bild/Figure 197**



Approx. weight 0.2 g

SFH 320, SFH 320 F **Bild/Figure 198**



Approx. weight 0.02 g

Detektoren
Detectors

Typ/Type (Transistoren pro Zeile) (Transistors per Array)	V_{CE} V	I_p V_{CE} = 5 V E_e = 0.5 mW 950 nm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499	500 bis/to 999
Silizium-Fototransistorzellen Silicon Phototransistor Arrays									
BPX 82	32	≥ 0.32 … < 1	199	Q62702-P21	125				
BPX 83	32	≥ 0.32 … < 1	199	Q62702-P25	50				
BPX 84	32	≥ 0.32 … < 1	199	Q62702-P30	50				
BPX 85	32	≥ 0.32 … < 1	199	Q62702-P31	25				
BPX 86	32	≥ 0.32 … < 1	199	Q62702-P22	20				
BPX 87	32	≥ 0.32 … < 1	199	Q62702-P32	20				
BPX 88	32	≥ 0.32 … < 1	199	Q62702-P33	20				
BPX 89	32	≥ 0.32 … < 1	199	Q62702-P26	20				
BPX 80	32	≥ 0.32 … < 1	199	Q62702-P28	20				

Typ Type	V_{CE} V	I_p mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499	
Silizium-Fotodarlington-Transistor Silicon Photodarlington Transistor									
SFH 501-2	15	2.5 … 5	200	Q62702-P301	20				

Typ Type	V_{CE} V	φ Grad Degrees	I_p E_e = 925 mW/cm² 950 nm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 1999
Fototransistoren (Seitenempfänger) Phototransistors (Sidefacing)								
					Q68000-			
LPT 80 A	≥ 30	40	≥ 0.2	201	-A7852	400		
LPT 85 A	30	40	≥ 0.9	201	-A8324	400		

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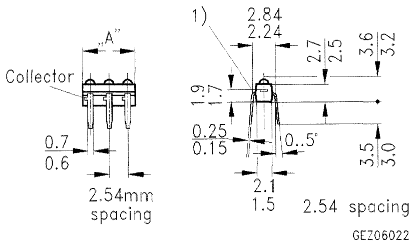
Detektoren
Detectors

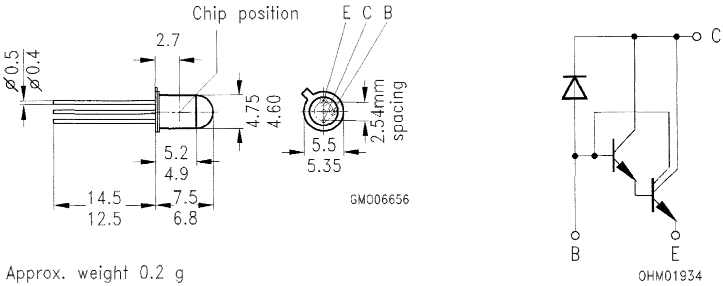
Typ Type	f kHz	Entfernungsbereich Viewing from m	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999
IR-Empfänger / Demodulator-Baustein **IR Receiver / Demodulator Devices**							
				Q62702-			
SFH 505 A	30	10 … 20	202	-P373	125		
▼ SFH 506-30	30	20 … 30	203	-P1196	108		
▼ SFH 506-33	33	20 … 30	203	-P1197	108		
▼ SFH 506-36	36	20 … 30	203	-P1198	108		
▼ SFH 506-38	38	20 … 30	203	-P1199	108		
▼ SFH 506-40	40	20 … 30	203	-P1200	108		
▼ SFH 506-56	56	20 … 30	203	-P1201	108		

BPX 80 ... BPX 89 **Bild/Figure 199**



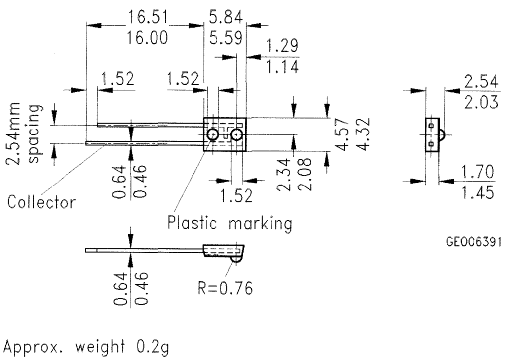
1) Detaching area for tools, flash not true to size.

SFH 501-2 **Bild/Figure 200**

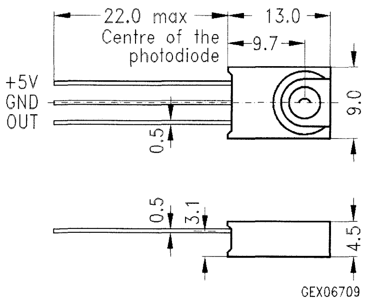


Approx. weight 0.2 g

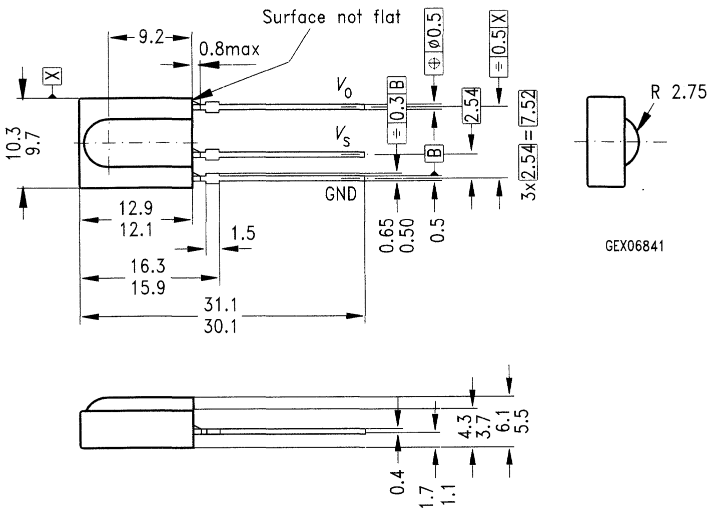
LPT 80 A, LPT 85 A **Bild/Figure 201**



SFH 505 A **Bild/Figure 202**



SFH 506 **Bild/Figure 203**



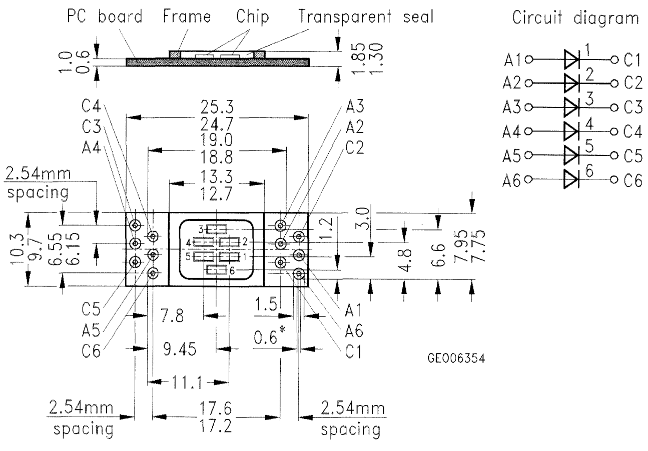
8

Detektoren
Detectors

Typ Type	I_p λ = 950 nm, E_e = 0.5 mW/cm² mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 449	100 bis/to 599	100 bis/to 2), 3), 4)
Kundenspezifische Optoelektronische Multichiparrays (KOM) **Custom-designed Optoelectronic Multichip arrays (KOM)**									
KOM 2033-A	8 (≥ 5.2)	204	Q62702-K2	15					
KOM 2033-AF	7.5 (≥ 4.9)	204	Q62702-K39	15					
KOM 2033-B	9 (≥ 7)	204	Q62702-K26	15					
KOM 2033-BF	8.5 (≥ 6.6)	204	Q62702-K38	15					
KOM 2045	17 (≥ 12)1)	205	Q62702-K3	3					
KOM 2057-L	80 (≥ 50)1)	206	Q62702-K8	20					
KOM 2059	2.5 (≥ 1.8)1)	207	Q62702-K4	1					
KOM 2084	80 (≥ 50)1)	208	Q62702-K15	10					
KOM 2085	180 (≥ 100)1)	209	Q62702-K16	10					
KOM 2100-A	8 (≥ 5.2)	210	Q62702-K37	15					
KOM 2100-AF	7.5 (≥ 4.9)	210	Q62702-K36	15					
KOM 2100-B	9 (≥ 7)	210	Q62702-K35	15					
KOM 2100-BF	8.5 (≥ 6.6)	210	Q62702-K34	15					

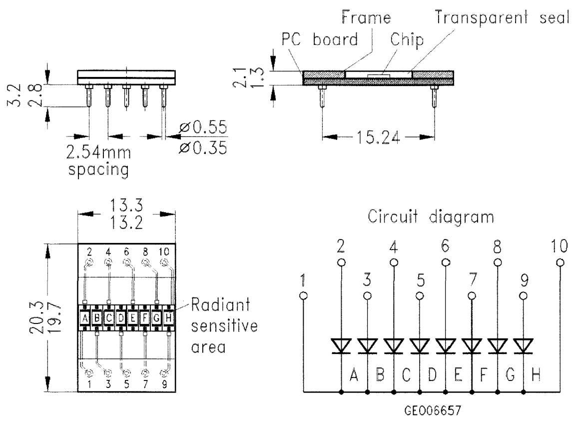
1) 1000 lx, Normlicht A/standard light A, T = 2856 K

KOM 2033 **Bild/Figure 204**

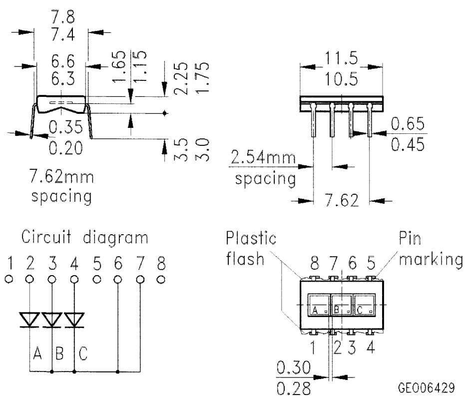


*plated-through hole

KOM 2045 **Bild/Figure 205**

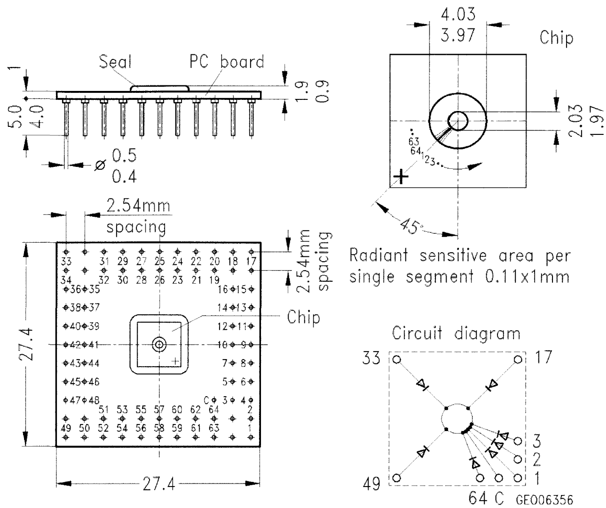


KOM 2057-L **Bild/Figure 206**



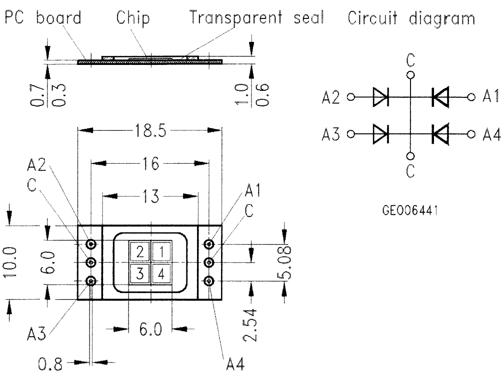
KOM 2059

Bild/Figure 207

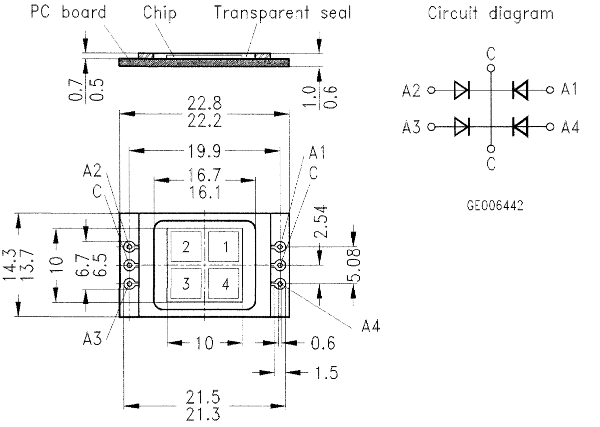


KOM 2084

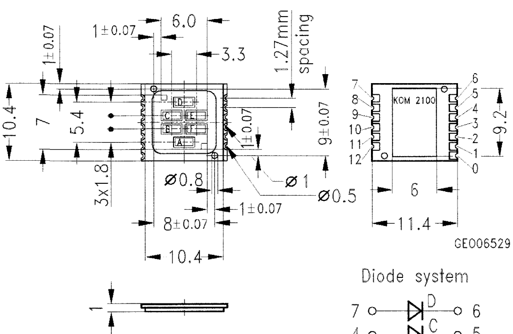
Bild/Figure 208

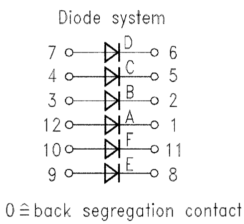


KOM 2085 **Bild/Figure 209**



KOM 2100 **Bild/Figure 210**





8

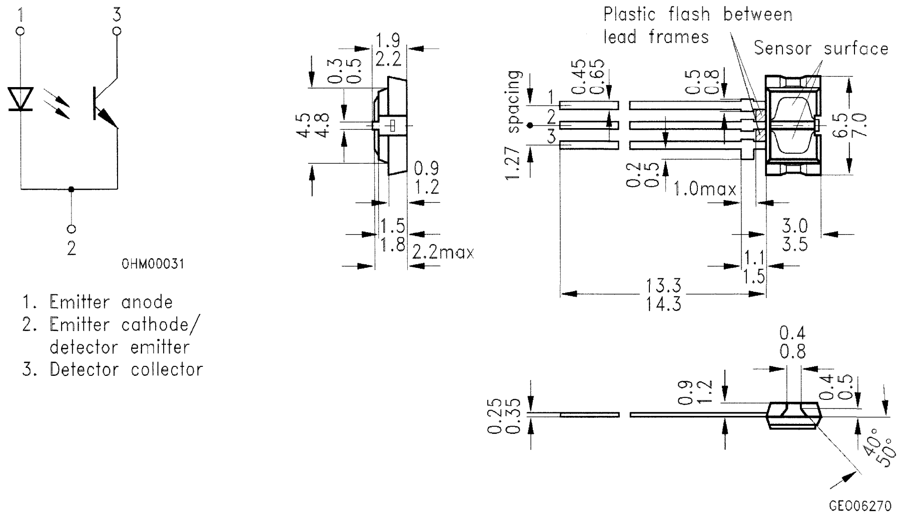
Lichtschranken
Light-Switches

Typ Type	I_{CE} I_F = 10 mA V_{CE} = 5 V d = 1 mm mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 999	
Miniatur-Reflexlichtschranken **Miniature Light Reflection Switches**							
SFH 900	0.25 … 1.25	211	Q62702-P1187	100			
SFH 900-1	0.25 … 0.5	211	Q62702-P935	100			
SFH 900-2	0.4 … 0.8	211	Q62702-P141	100			
SFH 900-3	0.63 … 1.25	211	Q62702-P1088	100			
SFH 900-4	≥ 1.0	211	Q62702-P1087	100			
SFH 905	0.04 … 0.10	211	Q62702-P1188	200			
SFH 905-1	0.04 … 0.125	211	Q62702-P1117	200			
SFH 905-2	≥ 0.10	211	Q62702-P1118	200			

Typ Type	t_r/t_f µs	I_F mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 49	50 bis/to 99	100 bis/to 499
Differential-Gabellichtschranke mit Zählimpuls und Richtungsausgang **Differential Photo Interrupter with Counting Pulse and Directional Indication** V_S = 4.5 … 16 V; I_S = 5 (≤ 10) mA								
SFH 910	0.3/0.3	5 … 50	212	Q62702-P866	25			
Taktscheibe für SFH 910 Encoder Wheel for SFH 910			213	Q62902-B166	200			

Miniaturlichtschranken

Bild/Figure 211



1. Emitter anode
2. Emitter cathode/
   detector emitter
3. Detector collector

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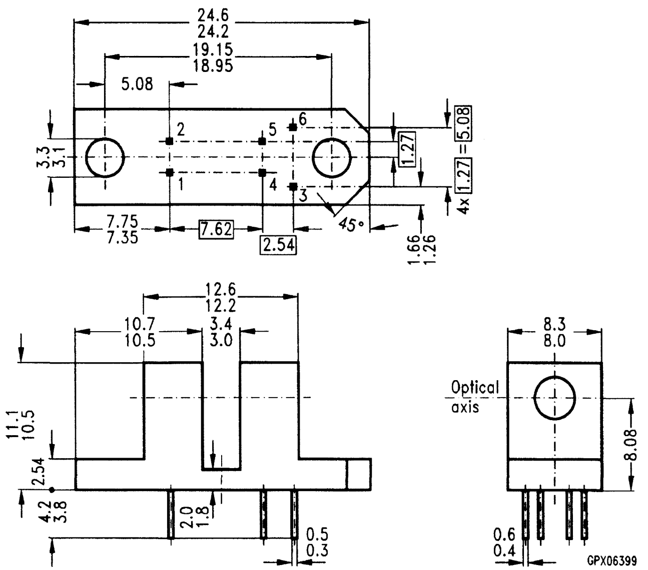
SFH 910

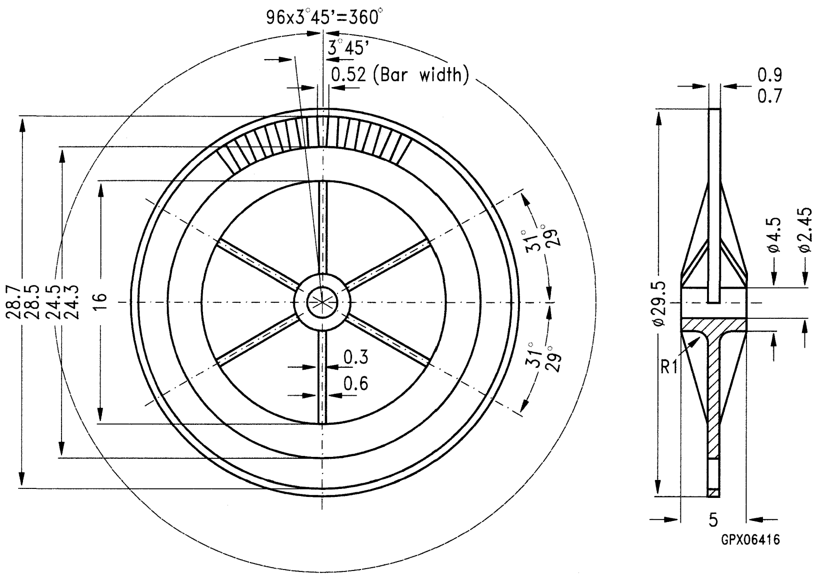
Bild/Figure 212



Pin	Function
1	Anode
2	Cathode
3	GND
4	Directional signal R
5	Counting pulse signal Z
6	Supply voltage

Taktscheibe/Encoder wheel

Bild/Figure 213



Optokoppler
Opto Couplers

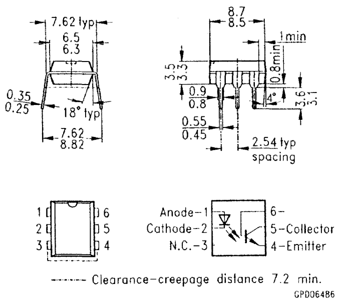
Typ Type TRIOS	V_{IO} V_	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler **Single-Channel Couplers**								
					Q62703-			
CNY 17-1	5300	40 ... 80	E 52744	214	-N86	300		
CNY 17-2	5300	63 ... 125		214	-N87	300		
CNY 17-3	5300	100 ... 200		214	-N88	300		
CNY 17-4	5300	160 ... 320		214	-N89	300		
CNY 17-1 Opt. 6	5300	40 ... 80		214	-N86-X6	300		
CNY 17-2 Opt. 6	5300	63 ... 125		214	-N87-X6	300		
CNY 17-3 Opt. 6	5300	100 ... 200		214	-N88-X6	300		
CNY 17-4 Opt. 6	5300	160 ... 320		214	-N89-X6	300		
CNY 17-1 Opt. 7	5300	40 ... 80		214	-N86-X7	300		
CNY 17-2 Opt. 7	5300	63 ... 125		214	-N87-X7	300		
CNY 17-3 Opt. 7	5300	100 ... 200		214	-N88-X7	300		
CNY 17-4 Opt. 7	5300	160 ... 320		214	-N89-X7	300		
CNY 17F-1	5300	40 ... 80		215	-N49	300		
CNY 17F-2	5300	63 ... 125		215	-N21	300		
CNY 17F-3	5300	100 ... 200		215	-N50	300		
CNY 17F-4	5300	160 ... 320		215	-N54	300		
CNY 17F-1 Opt. 6	5300	40 ... 80		215	-N49-X6	300		
CNY 17F-2 Opt. 6	5300	63 ... 125		215	-N21-X6	300		
CNY 17F-3 Opt. 6	5300	100 ... 200		215	-N50-X6	300		
CNY 17F-4 Opt. 6	5300	160 ... 320		215	-N54-X6	300		

Optokoppler
Opto Couplers

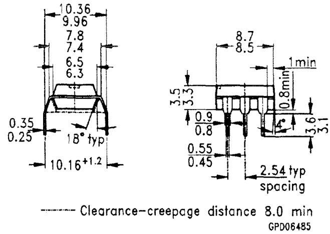
Typ Type TRIOS	V_{IO} V_	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler (Fortsetzung) **Single-Channel Couplers** (cont'd)								
					Q62703-			
CNY 17F-1 Opt. 7	5300	40 … 80	E 52744	215	-N49-X7	300		
CNY 17F-2 Opt. 7	5300	63 … 125	E 52744	215	-N21-X7	300		
CNY 17F-3 Opt. 7	5300	100 … 200	E 52744	215	-N50-X7	300		
CNY 17F-4 Opt. 7	5300	160 … 320	E 52744	215	-N54-X7	300		
					Q68000-			
SFH 600-0	5300	40 … 80	E 52744	214	-A7313	300		
SFH 600-1	5300	63 … 125	E 52744	214	-A7314	300		
SFH 600-2	5300	100 … 200	E 52744	214	-A7315	300		
SFH 601-1	5300	40 … 80	E 52744 CECC	214	-A7318	300		
SFH 601-2	5300	63 … 125	E 52744 CECC	214	-A7319	300		
SFH 601-3	5300	100 … 200	E 52744 CECC	214	-A7320	300		
SFH 601-4	5300	160 … 320	E 52744 CECC	214	-A7321	300		
SFH 601-1 Opt. 6	5300	40 … 80	E 52744	214	-A7318-X6	200		
SFH 601-2 Opt. 6	5300	63 … 125	E 52744	214	-A7319-X6	200		
SFH 601-3 Opt. 6	5300	100 … 200	E 52744	214	-A7320-X6	200		
SFH 601-4 Opt. 6	5300	160 … 320	E 52744	214	-A7321-X6	200		
SFH 601-1 Opt. 7	5300	40 … 80	E 52744	214	-A7318-X7	200		
SFH 601-2 Opt. 7	5300	63 … 125	E 52744	214	-A7319-X7	200		
SFH 601-3 Opt. 7	5300	100 … 200	E 52744	214	-A7320-X7	200		
SFH 601-4 Opt. 7	5300	160 … 320	E 52744	214	-A7321-X7	200		

CNY 17, SFH 600, SFH 601

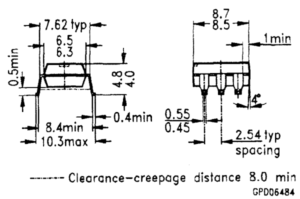
Bild/Figure 214



Option 6

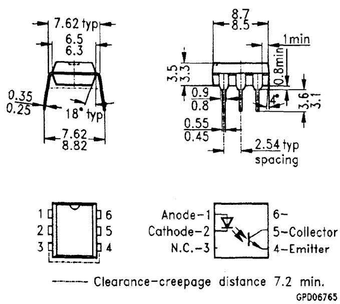


Option 7

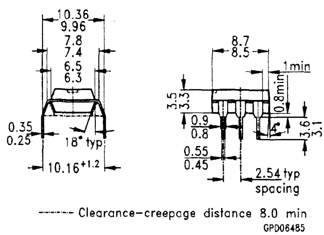


CNY 17F

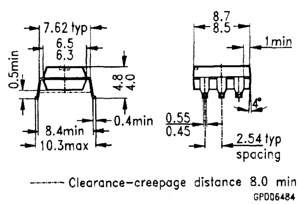
Bild/Figure 215



Option 6



Option 7



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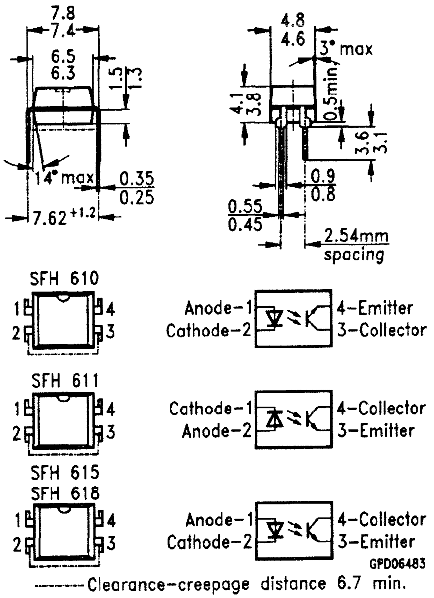
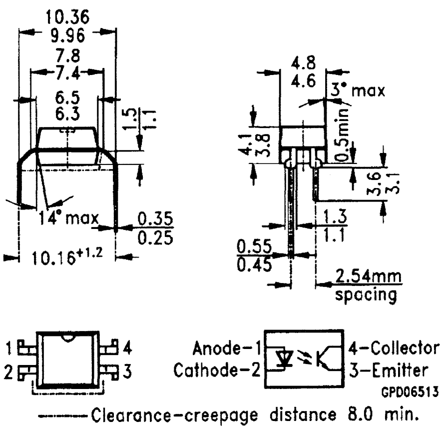
Optokoppler
Opto Couplers

Typ Type TRIOS	V_{IO} V_	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler (Fortsetzung) **Single-Channel Couplers** (cont'd)								
					Q62703-			
SFH 610-1	5300	40 … 80		216	-N75	300		
SFH 610-2	5300	63 … 125		216	-N76	300		
SFH 610-3	5300	100 … 200		216	-N77	300		
SFH 611-1	5300	40 … 80		216	-N82	300		
SFH 611-2	5300	63 … 125		216	-N83	300		
SFH 611-3	5300	100 … 200	E 52744	216	-N84	300		
SFH 615-1	5300	40 … 80		216	-N109	300		
SFH 615-2	5300	63 … 125		216	-N110	300		
SFH 615-3	5300	100 … 200		216	-N111	300		
SFH 617G-1	5300	40 … 80		217	-N127	300		
SFH 617G-2	5300	63 … 125		217	-N128	300		
SFH 617G-3	5300	100 … 200		217	-N129	300		
SFH 620-1	5300	40 … 125	E 52744	218	-N115	200		
SFH 620-2	5300	63 … 200	AC input	218	-N116	200		
SFH 620-3	5300	100 … 320		218	-N117	200		
Niedrigstrom-Koppler; I_F = 1 mA; V_{CE} = 0,5 V **Low-Current Couplers; I_F = 1 mA; V_{CE} = 0.5 V**								
					Q62703-			
SFH 608-2	5300	63 … 125	VDE	219	N169	200		
SFH 608-3	5300	100 … 200	beantragt/ applied for	219	N170	200		
SFH 608-4	5300	160 … 320	E 52744	219	N171	200		
					Q62703-			
SFH 618-2	5300	63 … 125	VDE	216	-N173	200		
SFH 618-3	5300	100 … 200	beantragt/ applied for	216	-N174	200		
SFH 618-4	5300	160 … 320	E 52744	216	-N175	200		
					Q68000-			
SFH 628-2	5300	63 … 200	VDE	218	-A8654	200		
SFH 628-3	5300	100 … 320	beantragt/ applied for	218	-A8655	200		
			E 52747					

SFH 610, SFH 611, SFH 615, SFH 618 — **Bild/Figure 216**

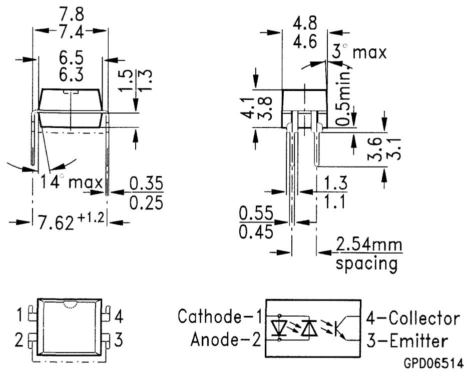


SFH 617G — **Bild/Figure 217**



SFH 620, SFH 628

Bild/Figure 218



Optokoppler
Opto Couplers

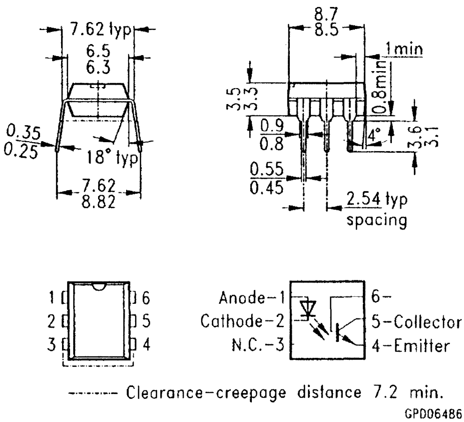
Typ Type TRIOS	V_{IORM} (VDE 0884) V	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler (Fortsetzung) **nach VDE 0884 (Option 1)** **Single-Channel Couplers** (cont'd) **in acc. with VDE 0884 (Option 1)**								
					Q68000-			
SFH 601-1 Opt. 1	630	40 ... 80		219	-A7318-X1	200		
SFH 601-2 Opt. 1	630	63 ... 125		219	-A7319-X1	200		
SFH 601-3 Opt. 1	630	100 ... 200		219	-A7320-X1	200		
SFH 601-4 Opt. 1	630	160 ... 320		219	-A7321-X1	200		
SFH 601-1 Opt. 1+6	630	40 ... 80		219	-A7318-X16	200		
SFH 601-2 Opt. 1+6	630	63 ... 125		219	-A7319-X16	200		
SFH 601-3 Opt. 1+6	630	100 ... 200		219	-A7320-X16	200		
SFH 601-4 Opt. 1+6	630	160 ... 320		219	-A7321-X16	200		
SFH 601-1 Opt. 1+7	630	40 ... 80		219	-A7318-X17	200		
SFH 601-2 Opt. 1+7	630	63 ... 125		219	-A7319-X17	200		
SFH 601-3 Opt. 1+7	630	100 ... 200		219	-A7320-X17	200		
SFH 601-4 Opt. 1+7	630	160 ... 320		219	-A7321-X17	200		
					Q62703-			
CNY 17-1 Opt. 1	630	40 ... 80		219	-N86-X1	200		
CNY 17-2 Opt. 1	630	63 ... 125		219	-N87-X1	200		
CNY 17-3 Opt. 1	630	100 ... 200	VDE	219	-N88-X1	200		
CNY 17-4 Opt. 1	630	160 ... 320	0884	219	-N89-X1	200		
CNY 17-1 Opt. 1+6	630	40 ... 80	E 52744	219	-N86-X16	200		
CNY 17-2 Opt. 1+6	630	63 ... 125		219	-N87-X16	200		
CNY 17-3 Opt. 1+6	630	100 ... 200		219	-N88-X16	200		
CNY 17-4 Opt. 1+6	630	160 ... 320		219	-N89-X16	200		
CNY 17-1 Opt. 1+7	630	40 ... 80		219	-N86-X17	200		
CNY 17-2 Opt. 1+7	630	63 ... 125		219	-N87-X17	200		
CNY 17-3 Opt. 1+7	630	100 ... 200		219	-N88-X17	200		
CNY 17-4 Opt. 1+7	630	160 ... 320		219	-N89-X17	200		
CNY 17 F-1 Opt. 1	630	40 ... 80		220	-N49-X1	200		
CNY 17 F-2 Opt. 1	630	63 ... 125		220	-N21-X1	200		
CNY 17 F-3 Opt. 1	630	100 ... 200		220	-N50-X1	200		
CNY 17 F-4 Opt. 1	630	160 ... 320		220	-N54-X1	200		
CNY 17 F-1 Opt. 1+6	630	40 ... 80		220	-N49-X16	200		
CNY 17 F-2 Opt. 1+6	630	63 ... 125		220	-N21-X16	200		
CNY 17 F-3 Opt. 1+6	630	100 ... 200		220	-N50-X16	200		
CNY 17 F-4 Opt. 1+6	630	160 ... 320		220	-N54-X16	200		

8

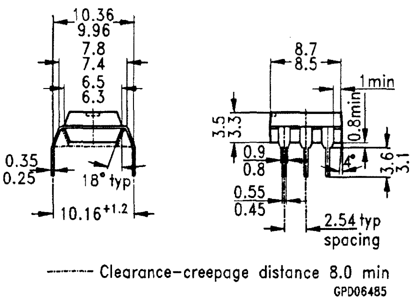
SFH 608, SFH 601, CNY 17

Bild/Figure 219

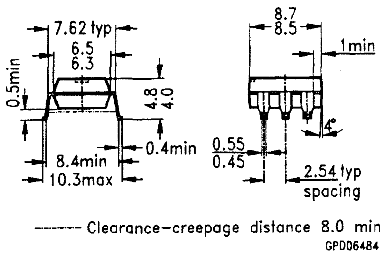
Option 1



Option 6



Option 7



Optokoppler
Opto Couplers

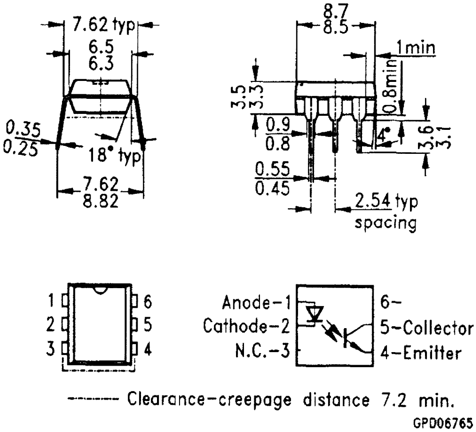
Typ Type TRIOS	V_{IORM} (VDE 0884) V	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler (Fortsetzung) **nach VDE 0884 (Option 1)** **Single-Channel Couplers** (cont'd) **in acc. with VDE 0884 (Option 1)**								
					Q62703-			
CNY 17 F-1 Opt. 1+7	630	40 … 80	VDE 0884 E 52744	220	-N49-X17	200		
CNY 17 F-2 Opt. 1+7	630	63 … 125		220	-N21-X17	200		
CNY 17 F-3 Opt. 1+7	630	100 … 200		220	-N50-X17	200		
CNY 17 F-4 Opt. 1+7	630	160 … 320		220	-N54-X17	200		
SFH 617G-1 Opt. 1	630	40 … 80		221	-N127-X1	200		
SFH 617G-2 Opt. 1	630	63 … 125		221	-N128-X1	200		
SFH 617G-3 Opt. 1	630	100 … 200		221	-N129-X1	200		
SFH 6135 Opt. 1	630	≥ 7		222	-N135-X1	100		
SFH 6135 Opt. 1+6	630	≥ 7		223	-N135-X16	100		
SFH 6135 Opt. 1+7	630	≥ 7		223	-N135-X17	100		
SFH 6136 Opt. 1	630	≥ 19		222	-N133-X1	100		
SFH 6136 Opt. 1+6	630	≥ 19		223	-N133-X16	100		
SFH 6136 Opt. 1+7	630	≥ 19		223	-N133-X17	100		

8

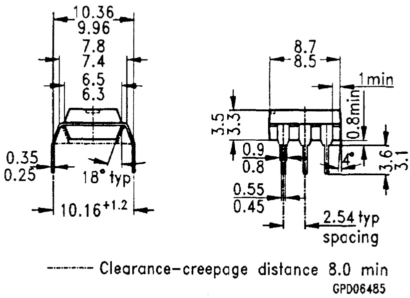
CNY 17F

Bild/Figure 220

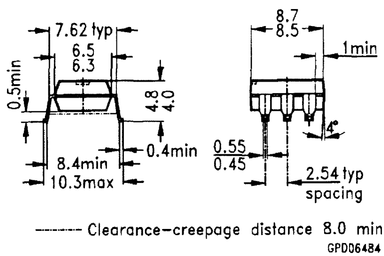
Option 1



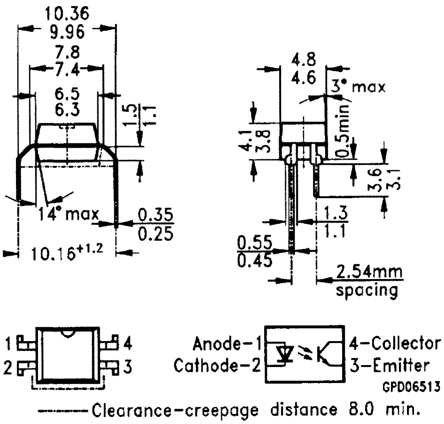
Option 6



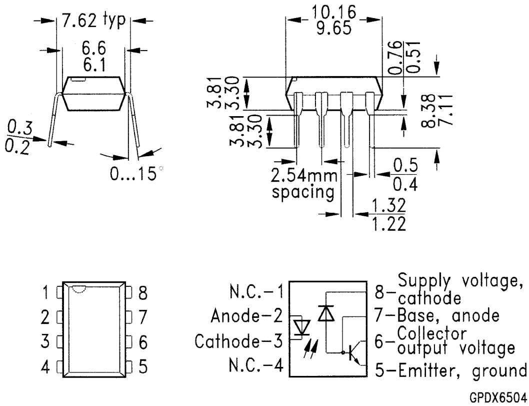
Option 7



SFH 617G (Option 1) **Bild/Figure 221**



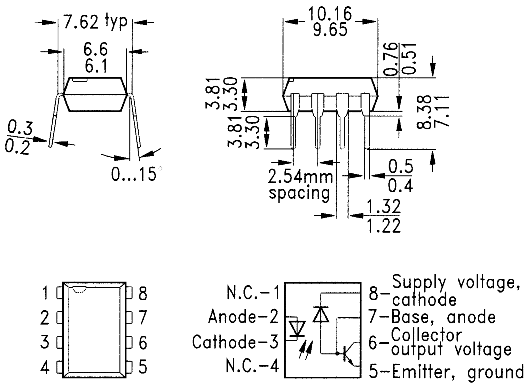
SFH 6135 (Option 1), **SFH 6136** (Option 1) **Bild/Figure 222**



8

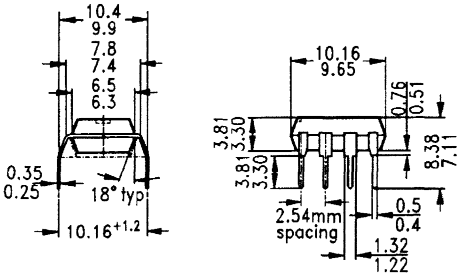
SFH 6135, SFH 6136 **Bild/Figure 223**

Option 1



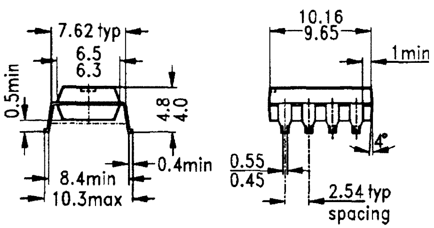
GPDX6504

Option 6



-------- Clearance–creepage distance 8.0 min
GPD06829

Option 7



-------- Clearance–creepage distance 8.0 min
GPD06830

Optokoppler
Opto Couplers

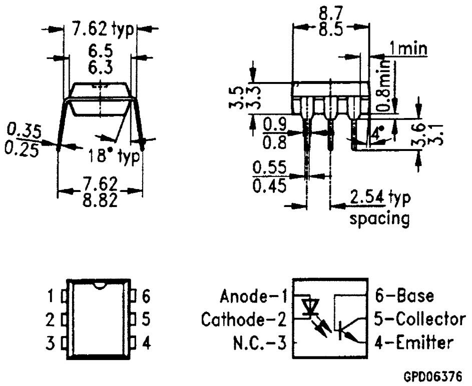
Typ Type	V_{IO} V_	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Einfachkoppler (Fortsetzung) **Single-Channel Couplers** (cont'd)								
					Q68000-			
IL 1	6000	≥ 20	E 52744	224	-A590	300		
IL 5	6000	≥ 50	E 52744	224	-A5931	300		
IL 10	10000	≥ 50	E 52744	225	-A879	100		
IL 11	10000	≥ 50	E 52744	226	-A8325	100		
					Q62703-			
IL 30	6000	≥ 100	E 52744	227	-N27	200		
IL 55	6000	≥ 100	E 52744	227	-N29	200		
IL 250	6000	≥ 50	E 52744	228	-N80	200		
					Q68000-			
IL 400	6000	–	E 52744	229	-A4376	200		
4N 25	2500	20	E 52744	230	-A5018	300		
4N 26	1500	20	E 52744	230	-A5017	300		
4N 27	1500	10	E 52744	230	-A5707	300		
					Q62703-			
4N 32	7500	≥ 500	E 52744	230	-N51	600		
					Q68000-			
4N 35	3550	100	E 52744	230	-A7302	300		
4N 36	2500	100	E 52744	230	-A7303	300		
4N 37	1500	100	E 52744	230	-A7304	300		
6N 138	6000	≥ 300		231	-A6410	200		
6N 139	6000	≥ 400		231	-A6411	200		
SL 5500	2800	40 … 300[1]		230	-A5141	300		
SL 5501	2800	23 … 400[2]		230	-A6398	300		

8

1) V_{CE} = 0,4 V
2) I_F = 6 mA; V_{CE} = 0,5 V

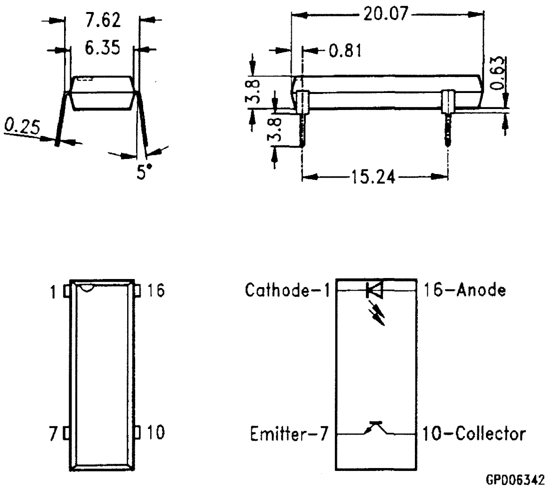
IL 1, IL 5

Bild/Figure 224



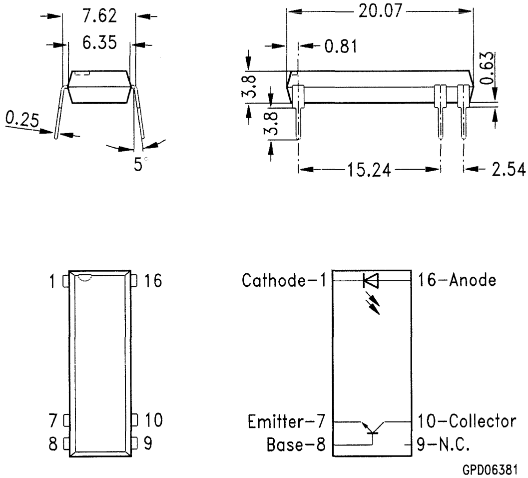
IL 10

Bild/Figure 225



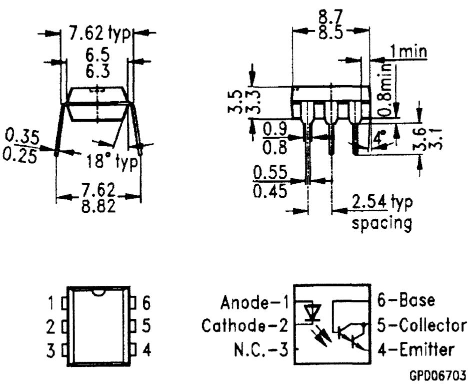
IL 11

Bild/Figure 226



IL 30, IL 55

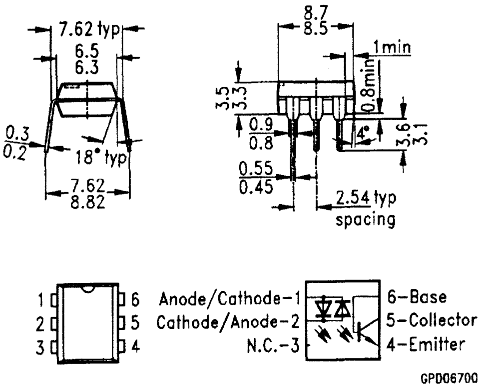
Bild/Figure 227



8

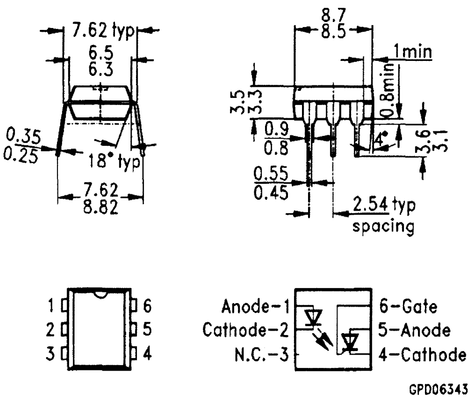
IL 250

Bild/Figure 228

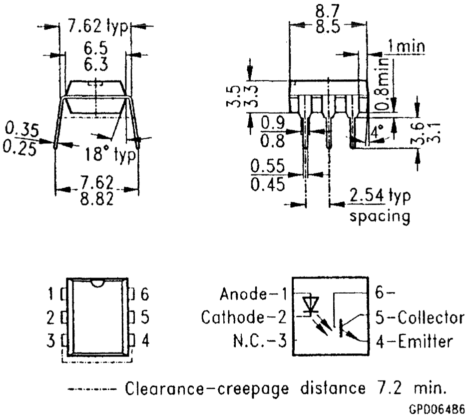


IL 400

Bild/Figure 229

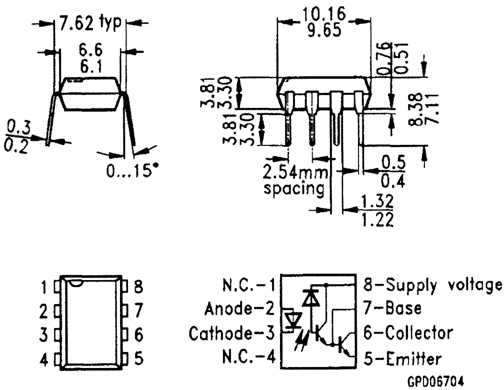


4N 25 … 4N 37, SL 5500, SL 5501 **Bild/Figure 230**



8

6N 138, 6N 139 **Bild/Figure 231**



Optokoppler
Opto Couplers

Typ Type	V_{IO} V	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
SMD-Koppler (ähnlich P-SOIC-8-Gehäuse, gegurtet) SMD Couplers (similar to P-SOIC-8 Package, taped)								
					Q68000-			
IL 205 T	2500	40 … 80	E 52744	232a	-A7926	200		
IL 206 T	2500	63 … 125	E 52744	232a	-A7927	200		
IL 207 T	2500	100 … 200	E 52744	232a	-A7928	200		
IL 211 T	2500	≥ 20	E 52744	232a	-A8251	200		
IL 212 T	2500	≥ 50	E 52744	232a	-A8252	200		
IL 213 T	2500	≥ 100	E 52744	232a	-A8253	200		
IL 215 T	2500	≥ 20[1)]	E 52744	232a	-A7929	200		
IL 216 T	2500	≥ 50[1)]	E 52744	232a	-A7930	200		
IL 217 T	2500	≥ 100[1)]	E 52744	232a	-A7931	200		
IL 221 T	2500	≥ 100[1)]	E 52744	232b	-A8254	200		
IL 222 T	2500	≥ 200[1)]	E 52744	232b	-A8255	200		
IL 223 T	2500	≥ 500[1)]	E 52744	232b	-A8256	200		
IL 256 T	2500	≥ 20	E 52744 AC input	232c	-A8372	200		
SMD-Koppler, Zweifachkoppler (ähnlich P-SOIC-8-Gehäuse) SMD Couplers, Dual-Channel-Couplers (similar to P-SOIC-8 Package)								
					Q68000-			
▼ ILD 205	2500	40 … 80	E 52744	233	-A8703	170		
▼ ILD 206	2500	63 … 125	E 52744	233	-A8704	170		
▼ ILD 207	2500	100 … 200	E 52744	233	-A8720	170		
▼ ILD 213	2500	≥ 100	E 52744	233	-A8721	170		

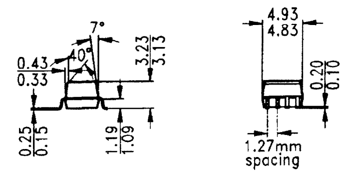
░ = SMD (Surface Mounted Device)

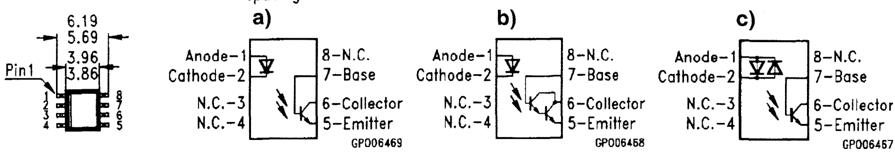
1) I_F = 1 mA

IL 205 T ... IL 256 T

Bild/Figure 232

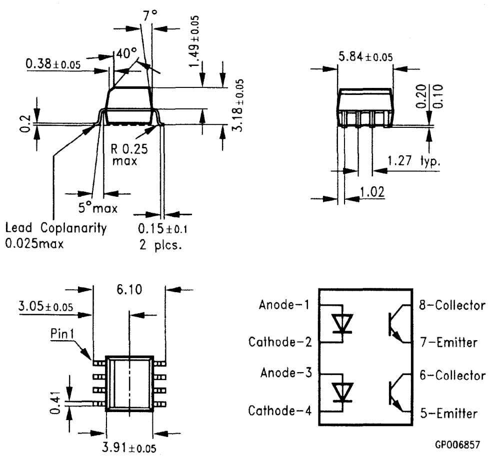
Pin	Function
1	Anode
2	Cathode
3	NC
4	NC
5	Emitter
6	Collector
7	Base
8	NC





ILD 205, ILD 206, ILD 207, ILD 213

Bild/Figure 233

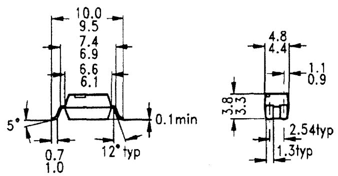


Optokoppler
Opto Couplers

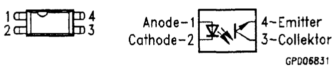
Typ Type	V_{IO} V	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
SMD-Koppler (ähnlich P-DIP-4-Gehäuse, gegurtet) SMD Couplers (similar to P-DIP-4 Package, taped)								
					Q68000-			
SFH 6106-1T	5300	40 … 80		234a	-A7775-T	250		
SFH 6106-2T	5300	63 … 125		234a	-A7776-T	250		
SFH 6106-3T	5300	100 … 200		234a	-A7777-T	250		
SFH 6106-4T	5300	160 … 320		234a	-A7778-T	250		
SFH 6116-1T	5300	40 … 80		234b	-A8622-T	250		
SFH 6116-2T	5300	63 … 125	E 52744	234b	-A8623-T	250		
SFH 6116-3T	5300	100 … 200		234b	-A8624-T	250		
SFH 6116-4T	5300	160 … 320		234b	-A8625-T	250		
SFH 6156-1T	5300	40 … 80		234c	-A8626-T	250		
SFH 6156-2T	5300	63 … 125		234c	-A8627-T	250		
SFH 6156-3T	5300	100 … 200		234c	-A8628-T	250		
SFH 6156-4T	5300	160 … 320		234c	-A8629-T	250		

= SMD (Surface Mounted Device)

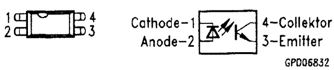
SFH 6106 T, SFH 6116 T, SFH 6156 T **Bild/Figure 234**



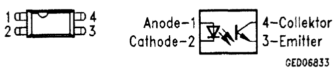
a)



b)



c)

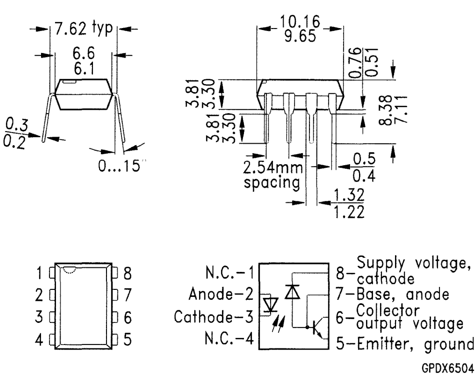


Optokoppler
Opto Couplers

Typ Type	V_{IO} V	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 3999	
Schnelle Koppler High-Speed Couplers									
6N 135	2500	≥ 7	E 52744	235	Q68000-A7961	200			
6N 136	2500	≥ 19	E 52744	235	Q68000-A5646	200			
SFH 6135	5300	≥ 7	E 52744	235	Q62703-N135	200			
SFH 6136	5300	≥ 19	E 52744	235	Q62703-N133	200			
▼ SFH 636*	2500	≥ 19	E 52744	236	Q62703-N179	400			

Typ Type	dv/dt V/µs	I_{FT} mA	I_T A_{RMS}	$V_{DRM/RRM}$/ V_{IO} V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 3999
Optotriac mit Nullpunktschalter Optotriac with Zero Crossing Switch										
IL 410	10000	2	0.3	600/6 k	237	Q68000-A8476	50			
▼ IL 4118	10000	1.6	0.3	800/6 k	237	Q68000-A8690	50			
Optotriac ohne Nullpunktschalter Optotriac without Zero Crossing Switch										
IL 420	10000	2	0.3	600/6 k	238	Q68000-A8477	50			

6N 135, 6N 136, SFH 6135, SFH 6136 **Bild/Figure 235**

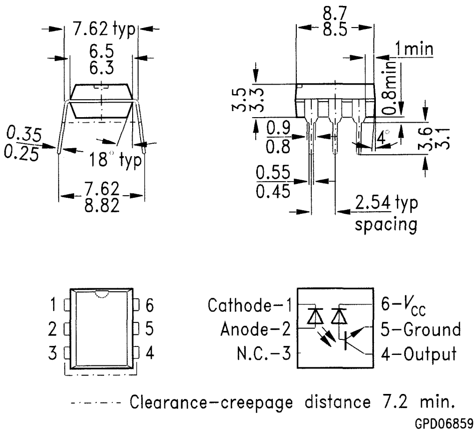


* verfügbar ab Okt. '93
available in Oct. '93

8

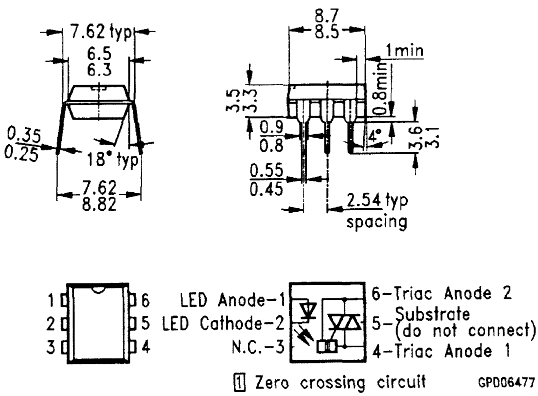
SFH 636

Bild/Figure 236



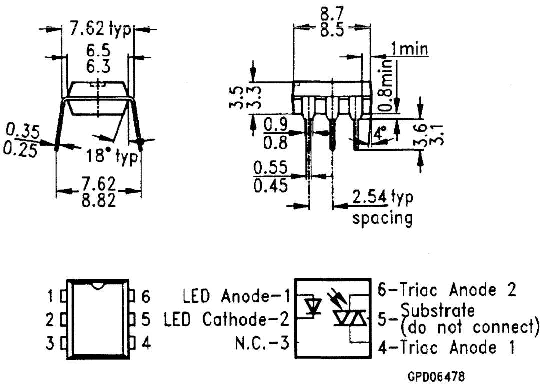
IL 410, IL 4118

Bild/Figure 237



IL 420

Bild/Figure 238



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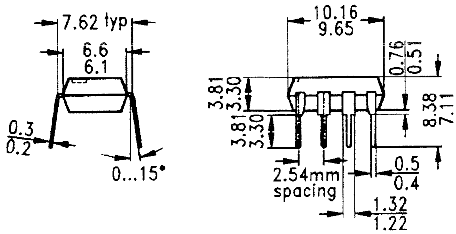
Optokoppler
Opto Couplers

Typ Type	V_{IO} V_	I_C/I_F I_F = 10 mA V_{CE} = 5 V %	VDE UL-No.	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	100 bis/to 499	500 bis/to 3999
Zweifachkoppler **Dual-Channel Couplers**								
					Q62703-			
ILCT 6	5300	≥ 20		239a	-N48	200		
					Q68000-			
ILD 1	5300	≥ 20	E 52744	239a	-A5972	200		
ILD 2	5300	≥ 100		239a	-A4357	200		
ILD 5	5300	≥ 50		239a	-A8024	200		
ILD 30	5300	≥ 100		239c	-A4377	200		
ILD 55	5300	≥ 100		239c	-A4378	200		
ILD 74	5300	≥ 12.5	E 52744	239a	-A5973	200		
ILD 610-2	2800	63 … 125		239b	-A4468	200		
ILD 610-3	2800	100 … 200		239b	-A6542	200		
ILD 620	7500	50 … 600[1]	E 52744	239d	-A8464	100		
▼ ILD 620GB	7500	100 … 600	AC-input	239d	-A8478	100		
ILD 621	7500	50 … 600[1]	E 52744	239e	-A8465	200		
▼ ILD 621GB	7500	100 … 600		239e	-A8466	200		
Vierfachkoppler **Quad-Channel Couplers**								
					Q68000-			
ILQ 1	5300	≥ 20		240a	-A5974	100		
ILQ 2	5300	≥ 100		240a	-A4358	100		
ILQ 5	5300	≥ 50	E 52744	240a	-A7995	100		
ILQ 30	5300	≥ 100		241	-A4379	100		
ILQ 55	5300	≥ 100		241	-A4380	100		
ILQ 74	5300	≥ 12.5		240a	-A6185	100		
ILQ 620	7500	50 … 60[1]	E 52744	240b	-A8454	100		
▼ ILQ 620GB	7500	100 … 600	AC-input	240b	-A8479	100		
ILQ 621	7500	50 … 60[1]	E 52744	240c	-A8455	100		
▼ ILQ 621GB	7500	100 … 600		240c	-A8456	100		

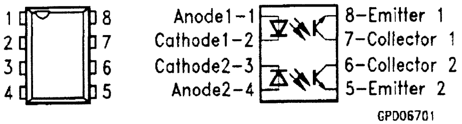
1) I_F = 5 mA

ILCT 6, ILD 1 … ILD 621

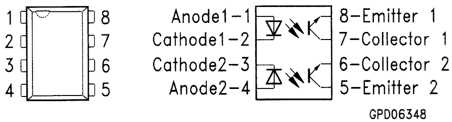
Bild/Figure 239



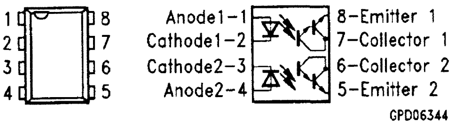
a)



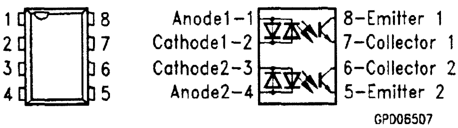
b)



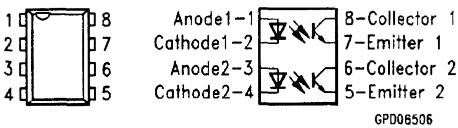
c)



d)

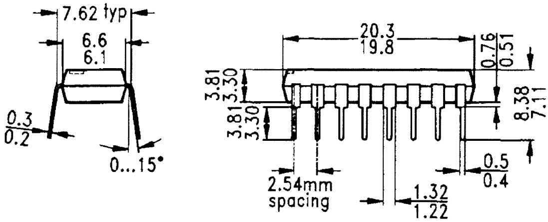


e)

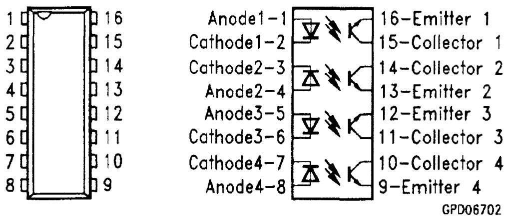


ILQ 1 … ILQ 5, ILQ 74 … ILQ 621

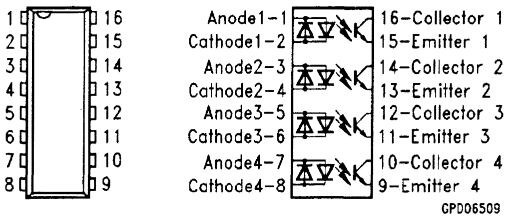
Bild/Figure 240



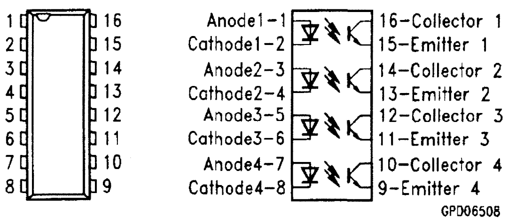
a)



b)

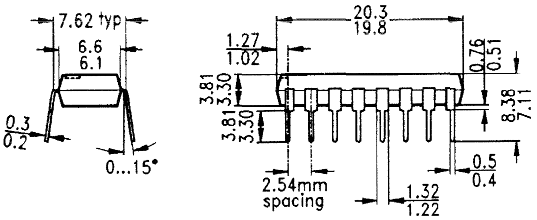


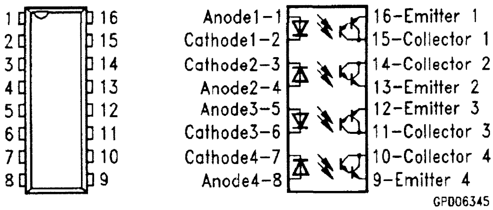
c)



ILQ 30, ILQ 55

Bild/Figure 241





8

Optokoppler (Spezialanwendungen)
Opto Couplers (Special Applications)

Typ Type	V_{ISOL} kV	V_L V	I_K µA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 499	500 bis/to 3999	
Fotovoltaik Optokoppler Photovoltaic-Optocouplers									
					Q62703-				
▼ SFH 650*	2.8	5	4 (≥ 1)	242	-N158	100			

Typ Type	V_{ISOL} kV	$I_{P\,typ}$ I_F = 10 mA A	Linearity (typ) %	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 3999
Linear Koppler Linear Coupler									
					Q68000-				
▼ IL 300	5.3	70	0,25	243	-A8483	50			
▼ IL 300 Opt.6	5.3	70	0,25	243	-A8536	50			

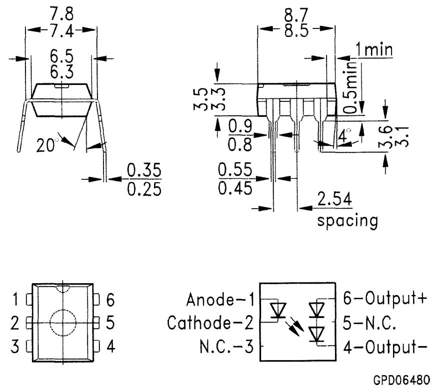
Typ Type	V_{ISOL} kV	V_{out} V	I_{out} mA	I_{FT} mA	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 3999
Halbleiterrelais SSR-Coupler										
						Q68000-				
▼ LH 1056	7.5	350	100	5	244	-A8675	50			

Typ Type	V_{ISOL} kV	V_{CE} V	CTR I_F = 10 mA V_{CE} = 10 V %	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 3999		
Hochspannungs Transistor Koppler High-Voltage Transistor-Coupler									
					Q68000-				
▼ SFH 640-2	5.3	300	63 … 125	245	-A8665	500			
▼ SFH 640-3	5.3	300	100 … 200	245	-A8666	500			

* verfügbar ab Okt. '93
available in Oct. '93

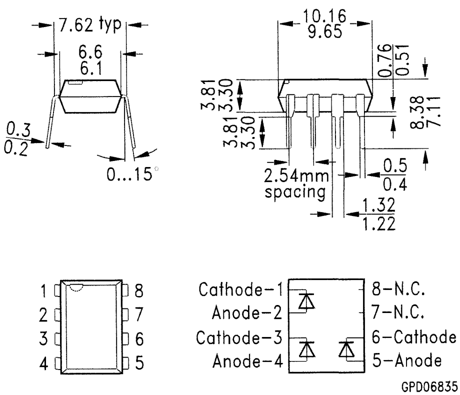
SFH 650

Bild/Figure 242



IL 300

Bild/Figure 243



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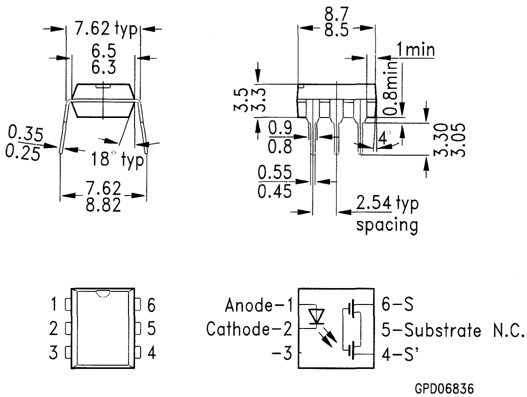
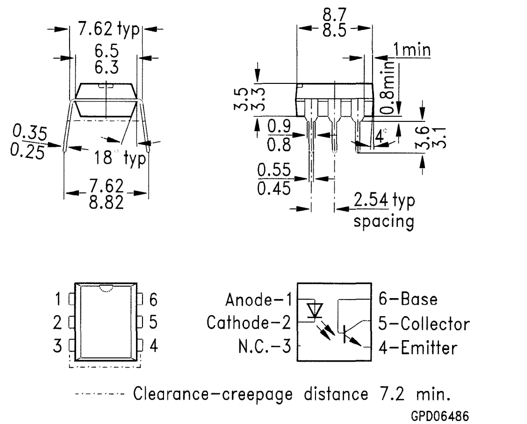
LH 1056 **Bild/Figure 244**



SFH 640 **Bild/Figure 245**



Lichtwellenleiter-Bauelemente
Fibre-Optic Components

für Glasfaseranwendungen
for glass fiber applications

Typ Type	φ_{in} µW	t_r I_F = 100 mA ns	t_f I_F = 100 mA ns	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999
Emitter für LWL-Anwendung (Stufenindexfaser 200 µm ∅, NA = 0,4; I_F = 100 mA) **Emitter for Fibre-Optic Communication** (Stepindex fibre 200 µm ∅, NA = 0.4; I_F = 100 mA)									
■ SFH 407-3	90 (≥ 63)	50	40	249	Q62702- -P854	40			

Typ Type	V_R V	f_{CO} MHz	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 999
Detektoren für LWL-Anwendungen **Detectors for Fibre-Optic Communication** λ_{smax} = 850 nm; S_λ = 0.55 (≥ 0.45) A/W								
				Q62702-				
SFH 202	50	500	246	-P91	10			
SFH 202 A	50	200	246	-P71	20			
■ SFH 2012	50	500	247	-P964	40			
■ SFH 2012 A	50	200	247	-P1115	20			
■ SFH 2031	50	500	248	-P1082	25			

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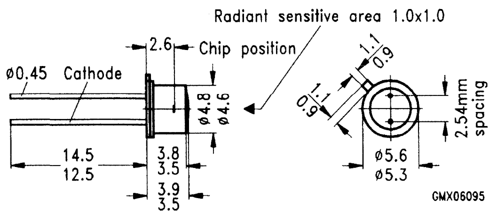
Lichtwellenleiter-Bauelemente
Fibre-Optic Components

für Plastikfaseranwendungen
for plastic fiber applications

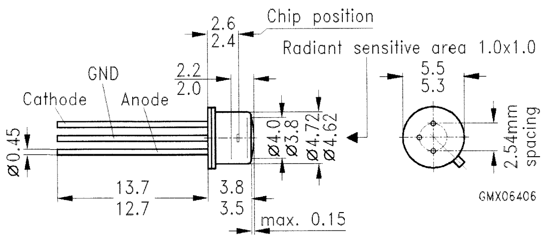
Typ Type	φ_{in} Plastic-faser Plastic Fibre μW	λ_{peak} nm	t_r μs	t_f μs	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Lichtleiter-Dioden (Emitter) (Faserenden poliert; I_F = 10 mA) **Light-Link Diodes (Emitter)** (polished fibre ends; I_F = 10 mA)									
						Q62702-			
SFH 450	90	950	1	1	250	-P1034	200		
SFH 452	180	770	0.04	0.04	251	-P280	50		
SFH 750	9	660	0.12	0.05	250	-P1031	200		
■ SFH 751	3	560	0.5	0.2	250	-P1032	200		
SFH 752	80	665	0.07	0.1	251	-P210	50		
Lichtleiter-Dioden (Emitter) mit Schraubverschluß **Light-Link Diodes (Emitter) with Screw Connection**									
						Q62702-			
SFH 450 V	90	950	1	1	252	-P265	50		
SFH 452 V	180	770	0.04	0.04	252	-P281	50		
SFH 750 V	9	660	0.12	0.05	252	-P266	75		
SFH 752 V	80	665	0.07	0.1	252	-P284	50		

Typ Type	I_p V_R = 5 V $\varnothing_{in}$ = 10 μW μA	λ_{Smax} nm	V_{Rmax} V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Lichtleiter-Diode (Detektor) **Light-Link Diodes (Detector)**								
					Q62702-			
SFH 250	3.0 (λ =660 nm)	850	30	250	-P1012	100		
Lichtleiter-Diode (Detektor) mit Schraubverschluß **Light-Link Diodes (Detector) with Screw Connection**								
					Q62702-			
SFH 250 V	3.0 (λ = 660 nm)	850	30	252	-P263	50		

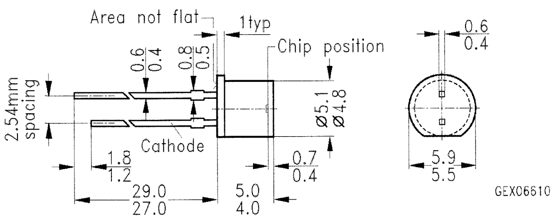
SFH 202, 202 A **Bild/Figure 246**



SFH 2012, 2012 A **Bild/Figure 247**

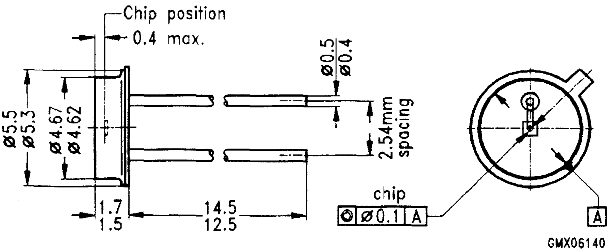


SFH 2031 **Bild/Figure 248**



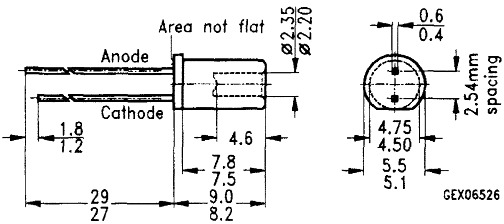
8

SFH 407 **Bild/Figure 249**

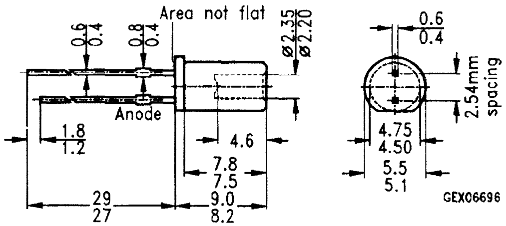


1) The upper edge of the vesin seal is located below the upper component edge

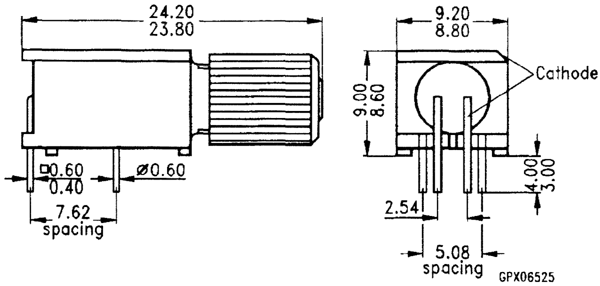
SFH 250, SFH 450, SFH 750, SFH 751 **Bild/Figure 250**



SFH 452, SFH 752 **Bild/Figure 251**



SFH 250 V, SFH 450 V, SFH 452 V, 750 V, 752 V **Bild/Figure 252**



Lichtwellenleiter-Bauelemente
Fibre-Optic Components

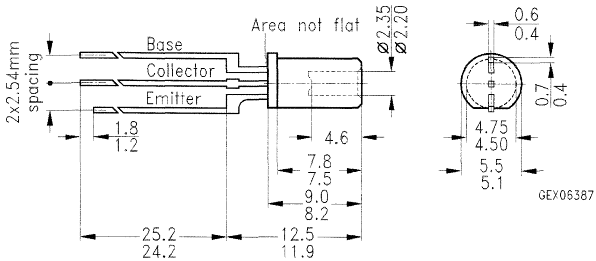
für Plastikfaseranwendungen
for plastic fiber applications

Typ Type	I_{CE} µA	λ_{Smax} nm	V_{CEO}	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Lichtleiter-Transistor (Detektor) Light-Link Transistor (Detector)								
SFH 350	0,8 (λ = 660 nm)	850	50	254	Q62702- -P1033	200		
Lichtleiter-Transistor (Detektor) mit Schraubverschluß Light-Link Transistor (Detector) with Screw Connection								
SFH 350 V	0,8 (λ = 660 nm)	850	50	255	Q62702- -P264	50		

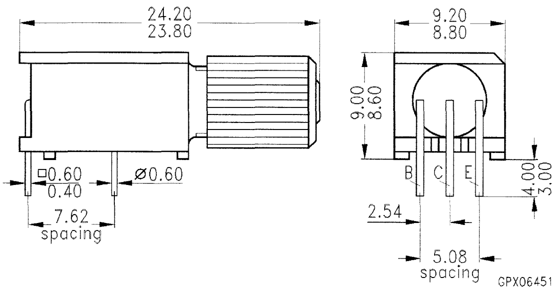
Typ Type	Übertragungsrate Transmission Rate Mbit/s	$\varnothing_{opt}$[1)] µW	t_{PHL}, t_{PLH} ns	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499
Lichtleiter-Digitalempfänger (TTL-kompatibel, offener Kollektorausgang) Light-Link Digital Emitter (TTL Compatible, open Collector)								
SFH 551	5	4 … 50	75	256	Q62702- -P1161	25		
Lichtleiter-Digitalempfänger (TTL-kompatibel) mit Schraubverschluß Light-Link Digital Emitter (TTL Compatible) with Screw Connection								
SFH 551 V	5	4 … 50	75	257	Q62702- -P287	25		

1) Optische Leistung für »Low« gemessen am Faserende/Optical output for »Low« measured at fibre end

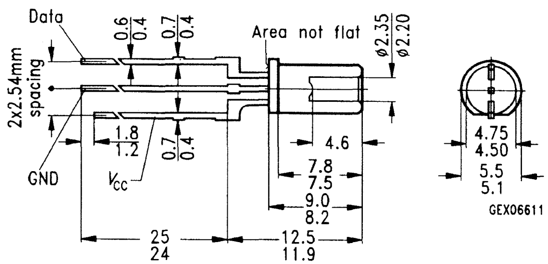
SFH 350 **Bild/Figure 254**



SFH 350 V **Bild/Figure 255**



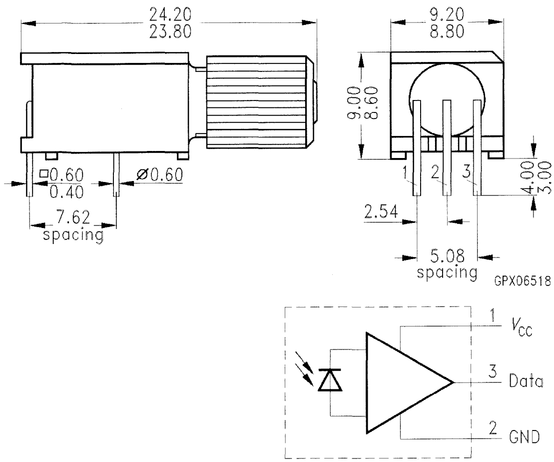
SFH 551 **Bild/Figure 256**



8

SFH 551 V

Bild/Figure 257



Lichtleiter Plastikfaser
Light-Link Plastic Fibre

passend für Lichtleiter-Bauelemente
used for light-link Semiconductors

Typ Type	Dämpfung Attenation dB/km	numerische numeric Apertur	Bestellnummer Ordering Code	Länge/Rolle Length/Reel m	
einadrig / single fibre					
V-P980/1000 310A	$\leq$ 310 (λ = 665 μm)	0,47	V46964- -U-5401-U1-F2	100	
zweiadrig / double fibre					
V-P980/1000 310AF	$\leq$ 310 (λ = 665 μm)	0,47	V46964- -U-5402-U1-F2	100	

8

9

Halbleiter-Sensoren

Semiconductor Sensors

Symbole und Begriffe
Symbols and Terms

Symbol	Bezeichnung	Designation
B	Magn. Induktion	Inductance
F_L	Linearitätsfehler	Linearity error
I_{OUT}	Ausgangsstrom	Output current
$I_{1\,max}$	Max. zul. Steuerstrom in ruhiger Luft	Max. permissible supply current in still air
$I_{1\,N}$	Steuerstromnennwert	Rated supply current
I_N	Nennstrom	Rated current
M	Mittensymmetrie	Center symmetry
p_{max}	Überlastdruck	Max. pressure
R_{tot}	Gesamtwiderstand (Potentiometer)	Total resistance (potentiometer)
R_B	Brückenwiderstand	Bridge resistance
R_B/R_0	Faktor der Widerstandsänderung	Factor of rel. resistance change
R_0	Grundwiderstand	Basic resistance
R_{1-3}	Gesamtwiderstand	Total resistance
R_{10}	Steuerseitiger Innenwiderstand	Supply-side internal resistance
R_{20}	Hallseitiger Innenwiderstand	Hall-side internal resistance
R_{25}	Grundwiderstand bei T_A = 25 °C	Basic resistance at T_A = 25 °C
T_{max}	Max. zul. Temperatur	Max. permissible temperature
T_A	Umgebungstemperatur	Ambient temperature
V_{OUT}	Ausgangsspannung	Output voltage
$V_{OUT\,pp}$	Leerlaufspannung (Spitze-Spitze)	Open-circuit output voltage
V_{IN}	Speisespannung	Supply voltage
V_{20}	Leerlaufhallspannung	Open-circuit hall voltage
φ	Linearer Drehwinkel	Linear angle of rotation
Δp	Druckbereich	Pressure range

Umrechnungstabelle von Druckeinheiten
Conversion Table for Pressure Units

1 bar =	14,504 psi 10,2 mH_2O 1,02 at 0,987 atm 1,02 kp/cm^2 750 mmHg (Torr) 10^5 N/m^2 100 kPa

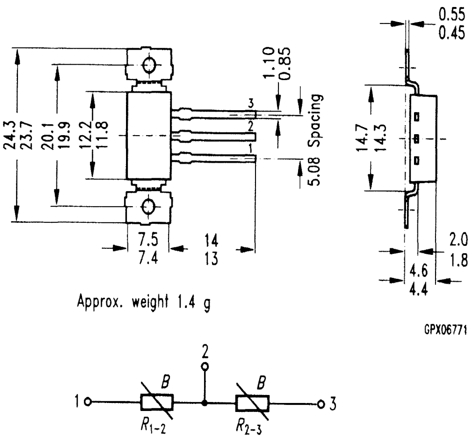
Feldplatten
Magnetoresistive Sensors

Typ Type	R_{1-3} T_A = 25 °C Ω[1]	V_{IN} max V	$V_{OUT\,pp}$ T_A= 25°C V_{IN} = 5 V V	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499
Feldplatten-Differential-Fühler MR Differential Sensors										
					Q65210-					
FP201L100	700 ... 1400	10	≥ 2.2	300	-L101	2				
FP210L100-22[2]	220 ... 400	7.5	≥ 1.0	301	-L100-W4	5				
FP210D250-22[3]	1000 ... 1600	7.5	≥ 1.1	301	-D250-W5	5				
					Q65212-					
FP212L100-22	220 ... 400	10	≥ 1.0	302	-L1004	10				
FP212D250-22	1000 ... 1600	10	≥ 1.1	302	-D2504	10				

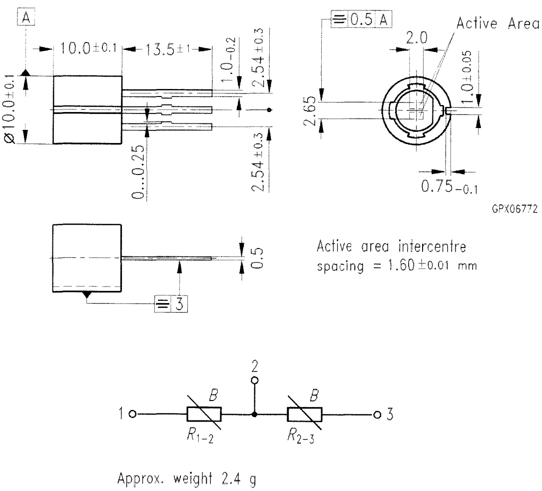
9

1) Luftspalt zum Ansteuerteil $\delta = \infty$
Air gap to driving element $\delta = \infty$
2) Nachfolgetyp für FP210L100-2 (ab Januar 93)
Replacement for FP210L100-2 (since January 93)
3) Nachfolgetyp für FP210D250-2 (ab Januar 93)
Replacement for FP210D250-2 (since January 93)

FP201L 100 **Bild/Figure 300**

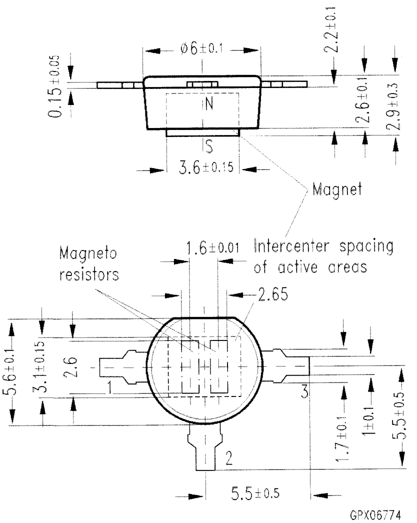


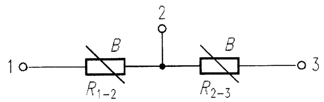
FP 210L100-22, FP 210D250-22 **Bild/Figure 301**



FP 212L100-22
FP 212D250-22

Bild/Figure 302





Approx. weight 0.35 g

Feldplatten
Magnetoresistive Sensors

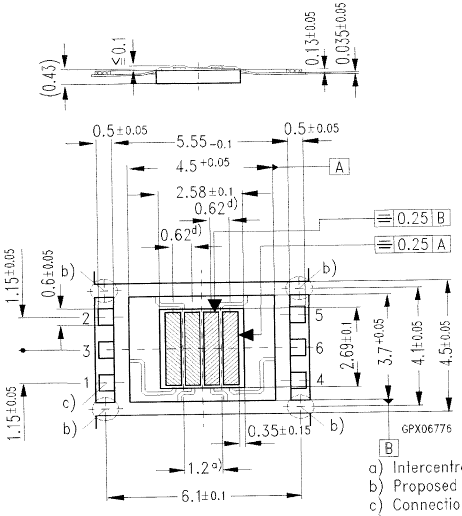
Typ Type	R_{1-3} T_A = 25 °C ± 20 % Ω[1]	M T_A = 25°C %	R_B/R_0 T_A = 25°C B= ±1T –	T_{max} °C	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499
Differential-Feldplatten Differential MRs											
FP 410 L (4 × 80) FM	100 … 220*	≤ 10	> 7	175	303	Q65110--L80-F	10				
FP 412 D250	370 … 630	≤ 10	> 12	175	304	Q65412--D250	10				
FP 412 L100	150 … 250	≤ 10	> 7	175	304	-L100	10				
FP 414 L300	500 … 700	≤ 10	> 7	175	305	Q65414--L300	10				

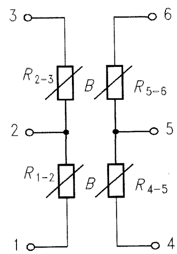
Typ Type	V_{IN} V	Φ Grad Degrees	I_{OUT} mA	R_{tot} Ω	F_L %	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 49
Feldplatten-Potentiometer ohne Verstärker MR Potentiometer without Amplifier											
FP 312L100	8	75	–	850	2.5	306	Q65312--L100-U	1			
Feldplatten-Potentiometer mit Verstärker MR Potentiometer with Amplifier											
FP310L100-30	15	0 … 30	0 … 20	–	1	307	Q65310--L100-U30	1			
FP310L100-75	15	0 … 75	0 … 20	–	2	307	-L100-U75	1			
Wasserdichter Stecker für FP 310/312 Watertight Plug for FP 310/312						–	Q62902--B146	20			

* $R_{1-3} \triangleq R_{4-6}$
[1] Luftspalt zum Ansteuerteil $\delta = \infty$
Air gap to driving element $\delta = \infty$

FP 410L (4 × 80) FM

Bild/Figure 303





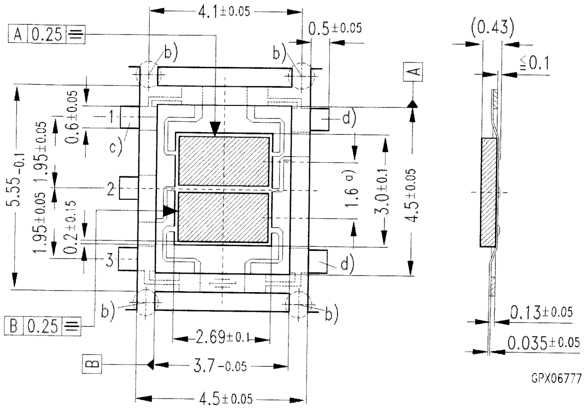
a) Intercentre spacing of the differential systems 1.2 mm ± 0.01
b) Proposed separating area
c) Connections free of lacquer on both sides
d) Intercentre spacing of each differential system 0.62 mm ± 0.01

Approx. weight 0.2 g
Dimensions in mm

9

FP 412D250, FP 412L100

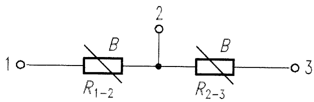
Bild/Figure 304



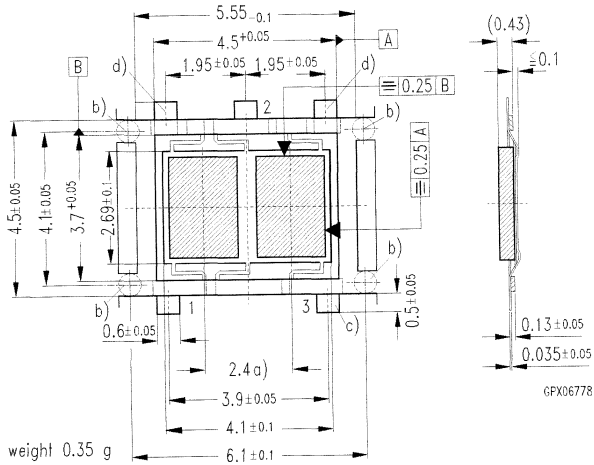
Approx. weight 0.2 g

a) Intercenter spacing of the differential systems 1.6mm ±0.01
b) Proposed separating area
c) Connections free of lacquer on both sides
d) Mechanical connection

Dimensions in mm



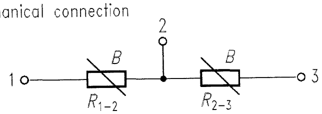
FP 414L300 **Bild/Figure 305**



Approx. weight 0.35 g

a) Intercenter spacing of the differential systems 2.4mm ±0.01
b) Proposed separating area
c) Connections free of lacquer on both sides
d) Mechanical connection

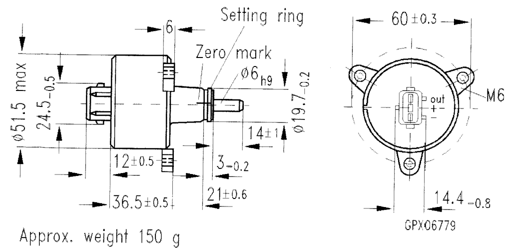
Dimensions in mm



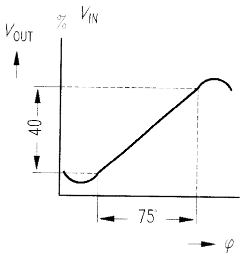
9

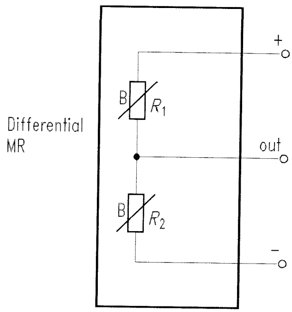
FP 312L100

Bild/Figure 306



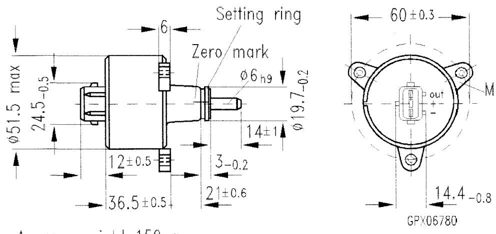
Approx. weight 150 g



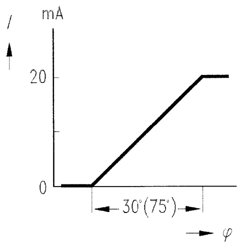


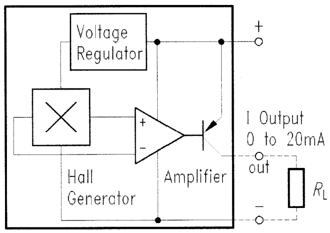
FP 310L100-30, FP 310L100-75

Bild/Figure 307



Approx. weight 150 g



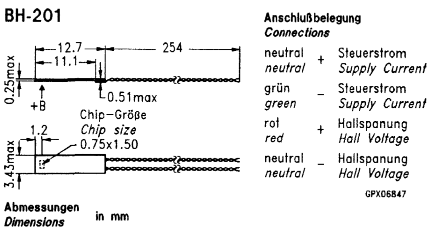


Hallgeneratoren
Hall Generators

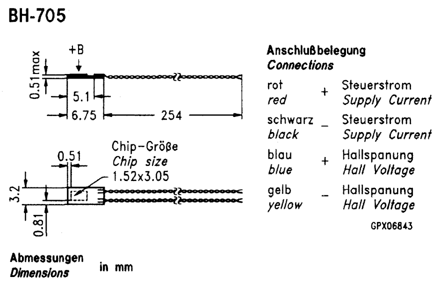
Typ Type	V_{20} I_{1N} B = 1 T mV	I_{1N} mA	T_A °C	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 49
Hallfeldsonden hoher Genauigkeit High-Precision Hall Field Probes									
					Q68000-				
▼ BH 201[1]	> 90	100	0 … + 50	308	-A8759-F261	1			
▼ BH 705[2]	≥ 75	100	– 65 … + 100	309	-A8762-F261	1			
▼ FH 301-20[3]	≥ 100	25	– 55 … + 100	310	-A8764-F261	5			
▼ BH 701[4]	≥ 60	100	– 40 … + 100	311	-A8760-F261	1			
▼ FH 301-40[5]	≥ 100	15	– 55 … + 100	310	-A8765-F261	5			
▼ FH 520	> 100	25	– 55 … + 100	312	-A8766-F261	5			
▼ FH 540	> 100	15	– 55 … + 100	312	-A8767-F261	5			
▼ GH 600	> 50	5	– 55 … + 100	313	-A8763-F261	5			
Axialfeldsonde Axial Field Probe									
					Q68000-				
▼ BH 704[6]	≥ 60	100	– 40 … + 100	314	-A8761-F261	1			

[1] Nachfolgetyp für SBV 525
Replacement for SBV 525
[2] Nachfolgetyp für SBV 603
Replacement for SBV 603
[3] Nachfolgetyp für SBV 604
Replacement for SBV 604
[4] Nachfolgetyp für SBV 613
Replacement for SBV 613
[5] Nachfolgetyp für SBV 620
Replacement for SBV 620
[6] Nachfolgetyp für RHY 11
Replacement for RHY 11

BH 201 **Bild/Figure 308**

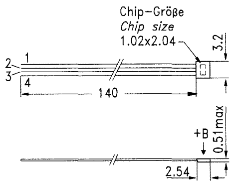


BH 705 **Bild/Figure 309**



FH 301-20/FH 301-40 — Bild/Figure 310

FH 301-20
FH 301-40



Anschlußbelegung
Connections

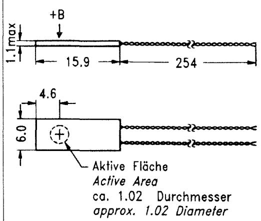
1	gelb *yellow*	–	Hallspanung *Hall Voltage*
2	rot *red*	+	Steuerstrom *Supply Current*
3	blau *blue*	+	Hallspanung *Hall Voltage*
4	schwarz *black*	–	Steuerstrom *Supply Current*

GPX06846

Abmessungen ***Dimensions*** **in mm**

BH 701 — Bild/Figure 311

BH-701



Anschlußbelegung
Connections

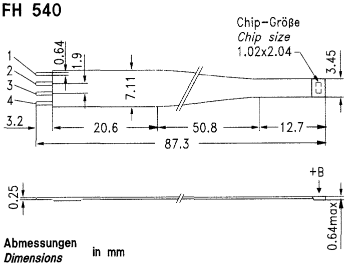
rot *red*	+	Steuerstrom *Supply Current*
schwarz *black*	–	Steuerstrom *Supply Current*
blau *blue*	+	Hallspanung *Hall Voltage*
gelb *yellow*	–	Hallspanung *Hall Voltage*

GPX06845

Abmessungen ***Dimensions*** **in mm**

FH 520/FH 540 — Bild/Figure 312

FH 520
FH 540



Anschlußbelegung
Connections

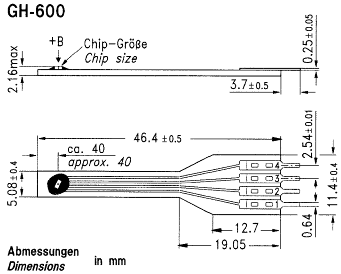
1	–	Steuerstrom *Supply Current*
2	+	Hallspanung *Hall Voltage*
3	–	Hallspanung *Hall Voltage*
4	+	Steuerstrom *Supply Current*

GPX06848

Abmessungen ***Dimensions*** **in mm**

GH 600

Bild/Figure 313



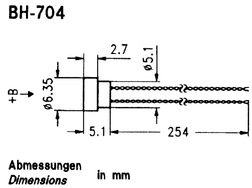
Anschlußbelegung
Connections

1	+	Steuerstrom *Supply Current*
2	–	Hallspanung *Hall Voltage*
3	+	Hallspanung *Hall Voltage*
4	–	Steuerstrom *Supply Current*

GPX06849

BH 704

Bild/Figure 314



Anschlußbelegung
Connections

rot *red*	+	Steuerstrom *Supply Current*
schwarz *black*	–	Steuerstrom *Supply Current*
blau *blue*	+	Hallspanung *Hall Voltage*
gelb *yellow*	–	Hallspanung *Hall Voltage*

GPX06844

GaAs-Hallgeneratoren
GaAs-Hall Generators

Typ Type	I_{max} mV	V_{20} I_{1N} = 5 mA B = 0.1 T mV	R_{10}, R_{20} Ω	T_A °C	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	25 bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
Positions-Sensoren **Position Sensors**											
						Q62705-					
KSY 10	7	85 … 115	900 … 1200	– 40 … 150	315	-K38	50				
KSY 13	7	95 … 145	900 … 1200	– 40 … 150	316	-K209	50				
KSY 14	7	85 … 130	900 … 1200	– 40 … 175	317	-K227	50				
▼ KSY 44	7	105 … 160	600 … 900	– 40 … 175	317	-K265	50				

GaAs-Hallgenerator-Modul
GaAs-Hallgenerator-Module

Typ Type	I_{max} mV	V_{out} V_{1NN} = ± 15 ± 0,2 V B = ± 50 mT V	V_0 B = 0 T mV	T_A °C	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 24	25 bis/to 99	100 bis/to 499
						Q62705-				
▼ KSY 64	15	± 10	< ± 5	– 40 … 125	318	-K284	10			

= SMD (Surface Mounted Device)

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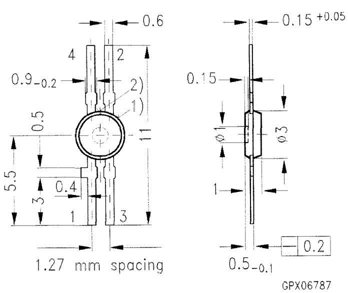
KSY 10 **Bild/Figure 315**

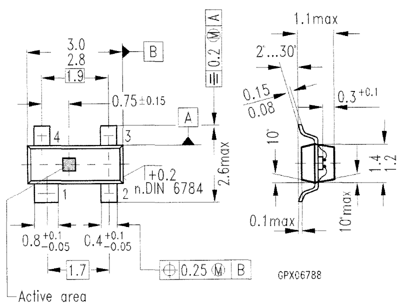


Approx. weight 0.03 g

1) Injection molding area, flash max 0.2 mm permissible on all sides at 3 mm dia.
2) Flash permissible between the body and the tie-bar

1,2 Hall voltage terminals
3+,4– Supply current terminals

KSY 13 **Bild/Figure 316**



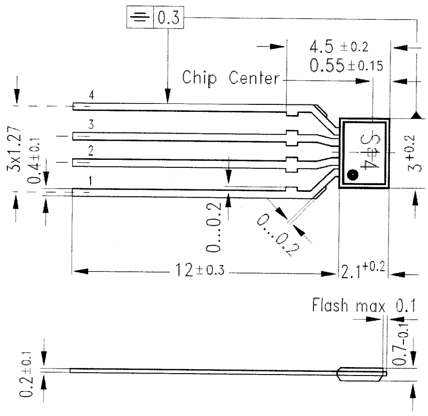
Active area

Approx. weight 0.01 g

1+,3– Supply current terminals
2,4 Hall voltage terminals

KSY 14, KSY 44

Bild/Figure 317

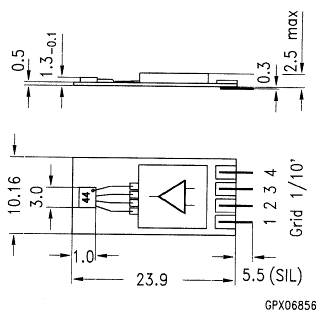


Approx. weight 0.05 g

1–,2+ Supply current terminals
3, 4 Hall voltage terminals

KSY 64

Bild/Figure 318



Pin Configuration

1	−15V
2	+15V
3	GND
4	V_{OUT}

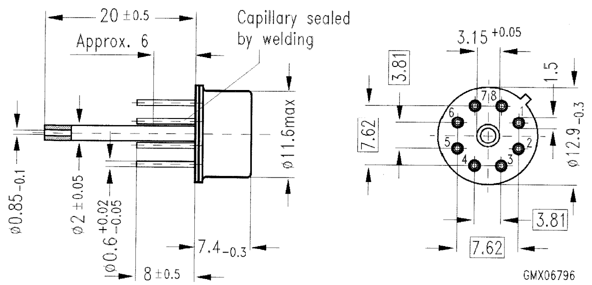
Dimensions in mm

Silizium-Druck-Sensoren
Silicon Pressure Sensors

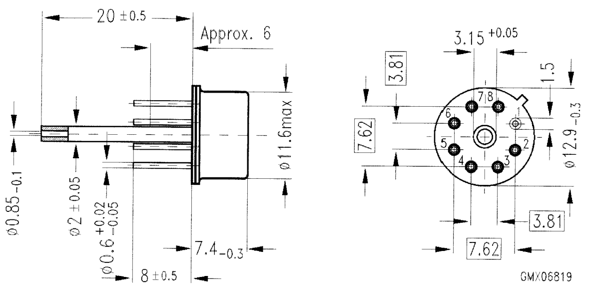
Typ Type	P_{max} bar	Δp bar	R_B kΩ	$V_{IN\ max}$ V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99
Absolutdruck-Sensoren Absolute Pressure Sensors										
						Q62705-				
KPY 42A	6	0 … 0.6	≈ 6	12	319	-K204	2			
KPY 43A	10	0 … 1.6	≈ 6	12	319	-K162	3			
KPY 44A	16	0 … 4.0	≈ 6	12	319	-K164	3			
KPY 45A	30	0 … 10	≈ 6	12	319	-K166	3			
Relativdruck-Sensoren Differential/Gauge Pressure Sensors										
						Q62705-				
KPY 32R	0.25	0 … 0.05	≈ 6	12	320	-K150	1			
KPY 33R	0.5	0 … 0.1	≈ 6	12	321	-K151	2			
KPY 41R	2.0	0 … 0.25	≈ 6	12	319	-K159	2			
KPY 42R	6.0	0 … 0.6	≈ 6	12	319	-K160	2			
KPY 43R	10	0 … 1.6	≈ 6	12	319	-K161	3			
KPY 44R	16	0 … 4.0	≈ 6	12	319	-K163	3			
KPY 45R	30	0 … 10	≈ 6	12	319	-K165	3			
KPY 46R	40	0 … 25	≈ 6	12	319	-K167	3			
KPY 47R	70	0 … 60	≈ 6	12	319	-K169	3			

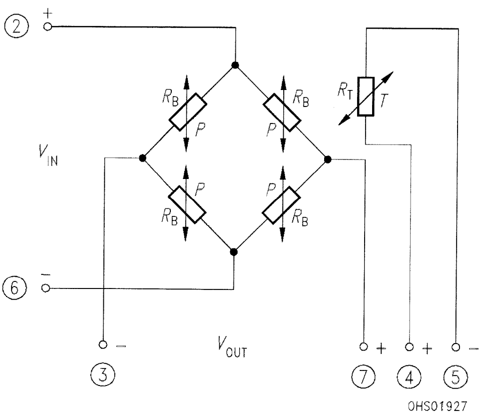
KPY 42A ... KPY 45A

Bild/Figure 319



KPY 41R ... KPY 47R





① Kapillarröhrchen*)
Capillary tube*)

② + V_{IN}

③ – V_{OUT}

④ + Temperatursensor
+ Temperature sensor

⑤ – Temperatursensor
– Temperature sensor

⑥ – V_{IN}

⑦ + V_{OUT}

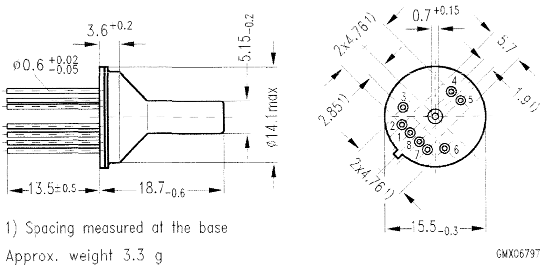
⑧ nicht belegt
not connected

*) geschlossen bei KPY 42A ... 45A
sealed with KPY 42A ... 45A

offen bei KPY 41R ... KPY 47R
open with KPY 41R ... KPY 47R

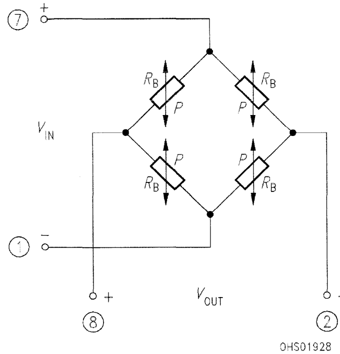
KPY 32R

Bild/Figure 320



1) Spacing measured at the base

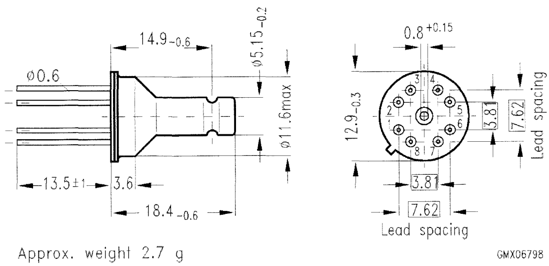
Approx. weight 3.3 g



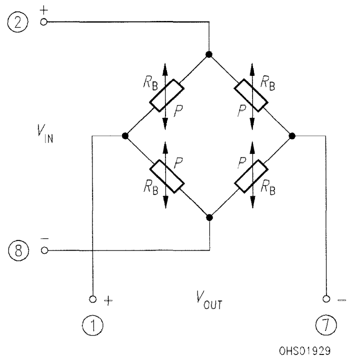
①; ⑦	Speisespannung V_{IN} Supply voltage V_{IN}
②; ⑧	Ausgangsspannung V_{OUT} Output voltage V_{OUT}
③ … ⑤	nicht belegt not connected
⑥	Substrat (auf + V_{IN} legen!) Substrate (connect to + V_{IN}!)

KPY 33R

Bild/Figure 321



Approx. weight 2.7 g

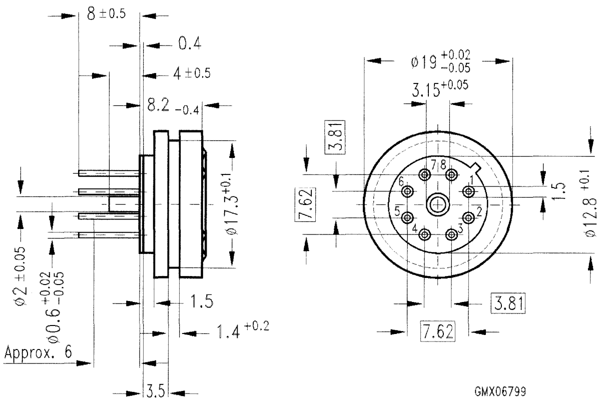


②; ⑧	Speisespannung V_{IN} Supply voltage V_{IN}
①; ⑦	Ausgangsspannung V_{OUT} Output voltage V_{OUT}
③ … ⑤	nicht belegt not connected
⑥	Substrat (auf + V_{IN} legen!) Substrate (connect to + V_{IN}!)

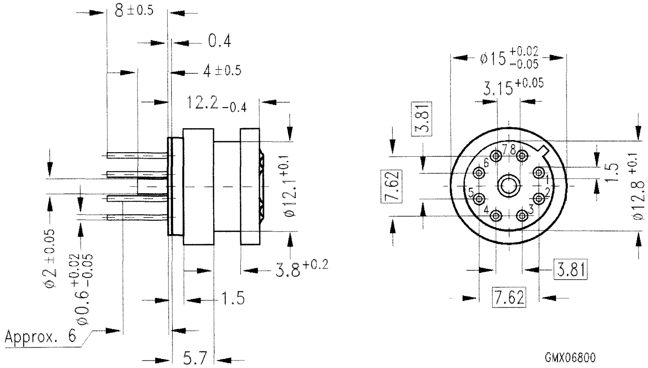
Silizium-Druck-Sensoren
Silicon Pressure Sensors

Typ Type	P_{max} bar	Δp bar	R_B kΩ	$V_{IN\ max}$ V	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24
Mediengetrennte Absolutdruck-Sensoren **Media-Separated Absolute Pressure Sensors**									
						Q62705-			
KPY 52A	6	0 … 0.6	≈ 6	12	322	-K211	1		
KPY 53A	10	0 … 1.6	≈ 6	12	322	-K177	1		
KPY 54A	16	0 … 4.0	≈ 6	12	322	-K179	1		
KPY 55A	30	0 … 10	≈ 6	12	322	-K181	1		
KPY 56A	75	0 … 25	≈ 6	12	322	-K183	1		
KPY 57A	100	0 … 60	≈ 6	12	323	-K185	1		
Mediengetrennte Relativdruck-Sensoren **Media-Separated Differential/Gauge Pressure Sensors**									
						Q62705-			
KPY 51R	2	0 … 0.25	≈ 6	12	324	-K174	1		
KPY 52R	6	0 … 0.6	≈ 6	12	324	-K175	1		
KPY 53R	10	0 … 1.6	≈ 6	12	324	-K176	1		
KPY 54R	16	0 … 4.0	≈ 6	12	324	-K178	1		
KPY 55R	30	0 … 10	≈ 6	12	324	-K180	1		
KPY 56R	75	0 … 25	≈ 6	12	324	-K182	1		
KPY 57R	100	0 … 60	≈ 6	12	325	-K184	1		

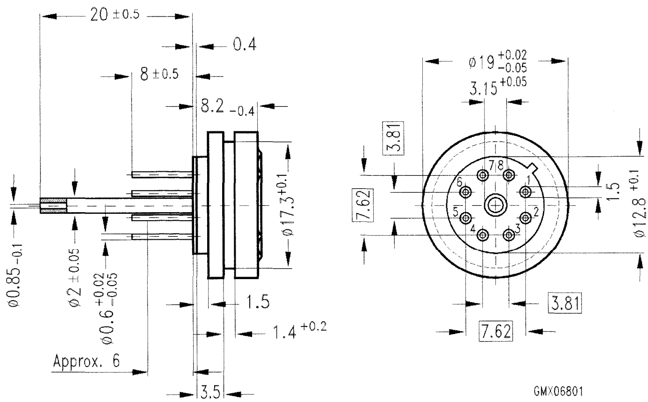
KPY 52A … KPY 56A **Bild/Figure 322**



KPY 57A … KPY 58A **Bild/Figure 323**



KPY 51R … KPY 56R **Bild/Figure 324**



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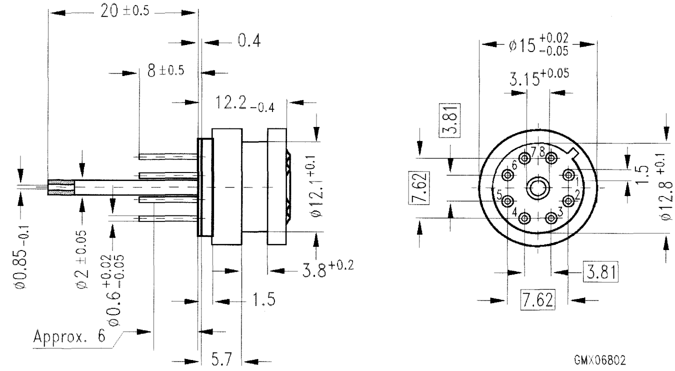
KPY 57R **Bild/Figure 325**



Anschlußbelegung KPY 51R … KPY 59A
Connections KPY 51R… KPY 59A

① Kapillarröhrchen
  Capillary tube

② + V_{IN}

③ + V_{OUT}

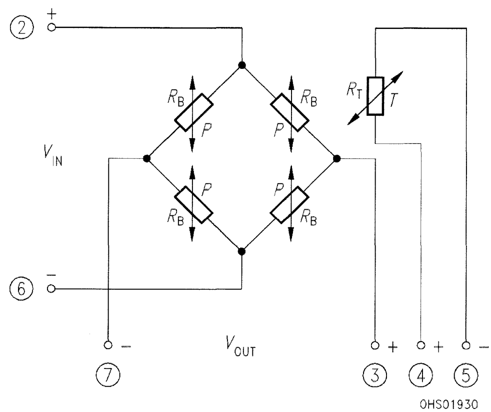
④ + Temperatursensor
  + Temperature sensor

⑤ – Temperatursensor
  – Temperature sensor

⑥ – V_{IN}

⑦ – V_{OUT}

⑧ nicht belegt
  not connected



Hinweis: Mittelröhrchen bzw. Mittelstift ist intern mit + V_{IN} verbunden.
Note: Centre tube/stud is connected internally to + V_{IN}

Temperatur-Sensoren
Temperature Sensors

Typ Type	R_{25} T_A = 25 °C I_N = 1 mA Ω	R_{25}– Tol %	T_A °C	Bild Fig.	Bestellnummer Ordering Code	Stck. Pcs. Min.	min. bis/to 99	100 bis/to 499	500 bis/to 999	1000 bis/to 2999
					Q62705-					
KTY 10*	2000	± 4	– 50 … 150	326	-K107	150				
KTY 10-5	1970	± 1	– 50 … 150	326	-K110	100				
KTY 10-6	2000	± 1	– 50 … 150	326	-K132	100				
KTY 10-7	2030	± 1	– 50 … 150	326	-K111	100				
KTY 11*	2000	± 4	– 50 … 150	327	-K244	75				
KTY 11-5	1970	± 1	– 50 … 150	327	-K245	50				
KTY 11-6	2000	± 1	– 50 … 150	327	-K246	50				
KTY 11-7	2030	± 1	– 50 … 150	327	-K247	50				
KTY 13*	2000	± 4	– 50 … 150	328	-K248	100				
KTY 13-5[1]	1970	± 1	– 50 … 150	328	-K249	100				
KTY 13-6[1]	2000	± 1	– 50 … 150	328	-K250	75				
KTY 13-7[1]	2030	± 1	– 50 … 150	328	-K251	100				
KTY 20*	1000	± 4	– 50 … 150	331	-K253	100				
KTY 20-5	985	± 1	– 50 … 150	331	-K254	100				
KTY 20-6	1000	± 1	– 50 … 150	331	-K255	100				
KTY 20-7	1015	± 1	– 50 … 150	331	-K256	100				
KTY 21*	1000	± 4	– 50 … 150	327	-K257	50				
KTY 21-5	985	± 1	– 50 … 150	327	-K258	50				
KTY 21-6	1000	± 1	– 50 … 150	327	-K259	50				
KTY 21-7	1015	± 1	– 50 … 150	327	-K260	50				
KTY 23*	1000	± 4	– 50 … 150	328	-K261	100				
KTY 23-5[1]	985	± 1	– 50 … 150	328	-K262	100				
KTY 23-6[1]	1000	± 1	– 50 … 150	328	-K263	100				
KTY 23-7[1]	1015	± 1	– 50 … 150	328	-K264	100				

= SMD (Surface Mounted Device)

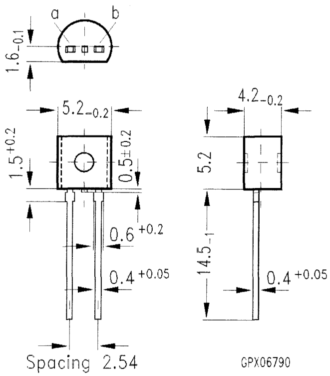
Typ Type	R_{25} T_A = 25 °C I_N = 1 mA Ω	R_{25}– Tol %	T_A °C	Bild Fig.	Bestell-Nr. Ordering Code	Stck. Pcs. Min.	min. bis/to 9	10 bis/to 24	25 bis/to 99	100 bis/to 499
KTY 16-6	2000	± 1	– 50 … 150	329	-K128	10				
KTY 19-6M	2000	± 1	– 50 … 150	330	-K271	5				
KTY 19-6Z	2000	± 1	– 50 … 150	330	-K272	5				
Steckerset für: KTY 19-6 M/Z					Q62901-					
Connector set for: KTY 19-6 M/Z					-B80	20				

[1] Nur gegurtet lieferbar
Delivery only taped

* Pro Packungseinheit ist eine Toleranz von ± 1 % gewährleistet
Each packaging unit contains parts grouped to ± 1 % tolerance

9

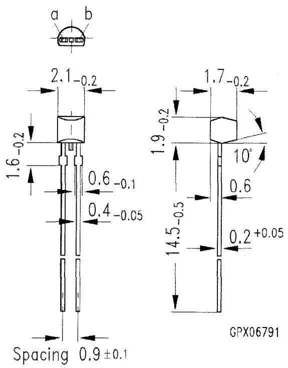
KTY 10 **Bild/Figure 326**



Approx. weight 0.25 g

a electrical contact
b electrical contact

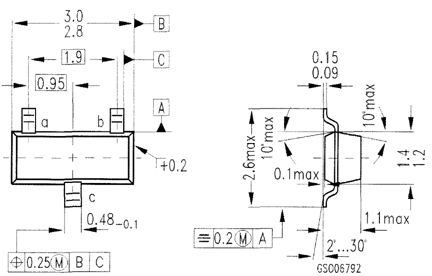
KTY 11, KTY 21 **Bild/Figure 327**



Approx. weight 0.02 g

a electrical contact
b electrical contact

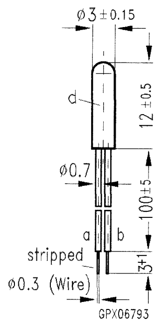
KTY 13, KTY 23 **Bild/Figure 328**



Approx. weight 0.01 g

a electrical contact
b electrical contact
c Substrate (must remain potential free)

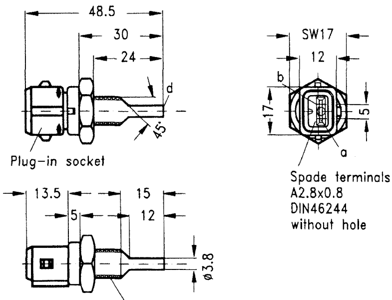
KTY 16-6 **Bild/Figure 329**



Approx. weight 0.07 g

a electrical contact, black/BK
b electrical contact, red/RD
c housing: potential free

KTY 19-6M, KTY 19-6Z **Bild/Figure 330**



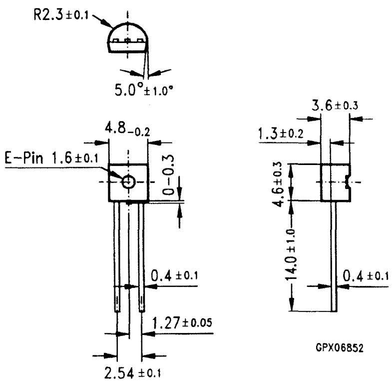
Gewinde	M10x1 = KTY 19-6M
Thread	NPTF 1/8"x27 = KTY 19-6Z

Approx. weight 18 g GPX06820

a electrical contact
b electrical contact
d housing: potential free
Material: DIN1.4305 Stainless steel
Edelstahl

9

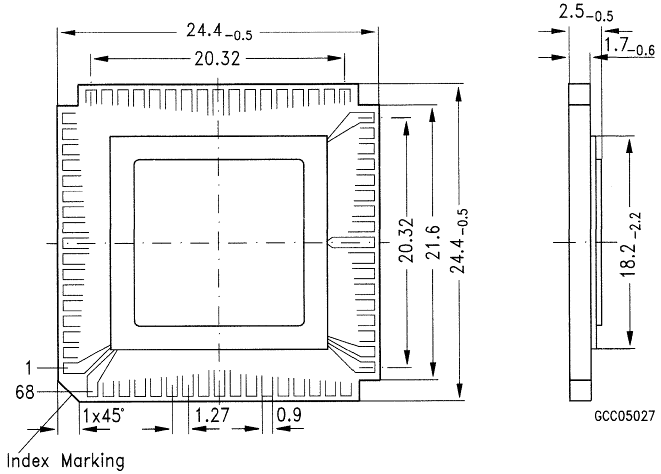
KTY 20 **Bild/Figure 331**



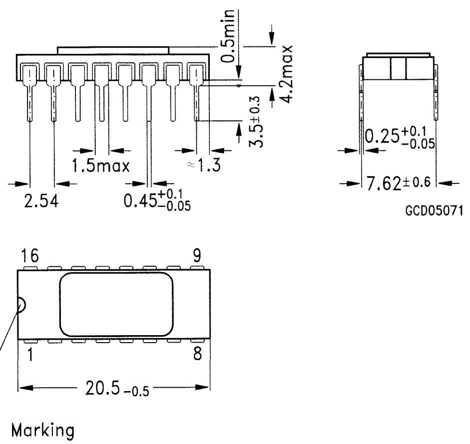
Gehäusebauformen für ICs

Package Outlines for ICs

C-CC-68
Keramik-Gehäuse / Ceramic package
(Ceramic leadless chip carrier)

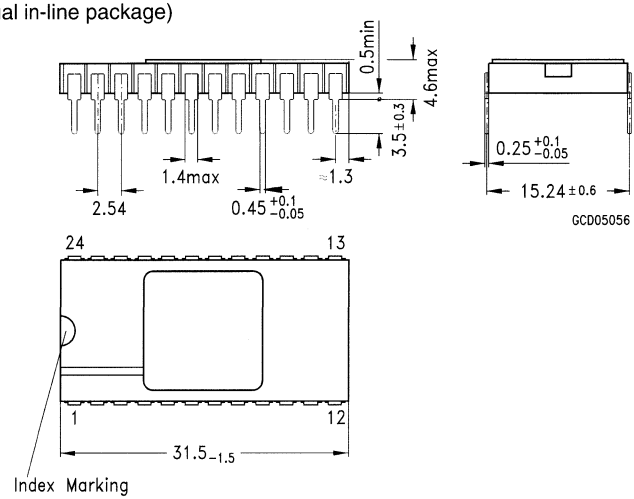


C-DIP-16
Keramik-Gehäuse / Ceramic package
(Ceramic dual in-line package)

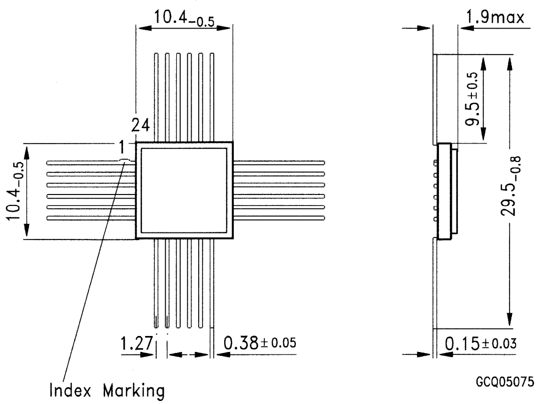


10

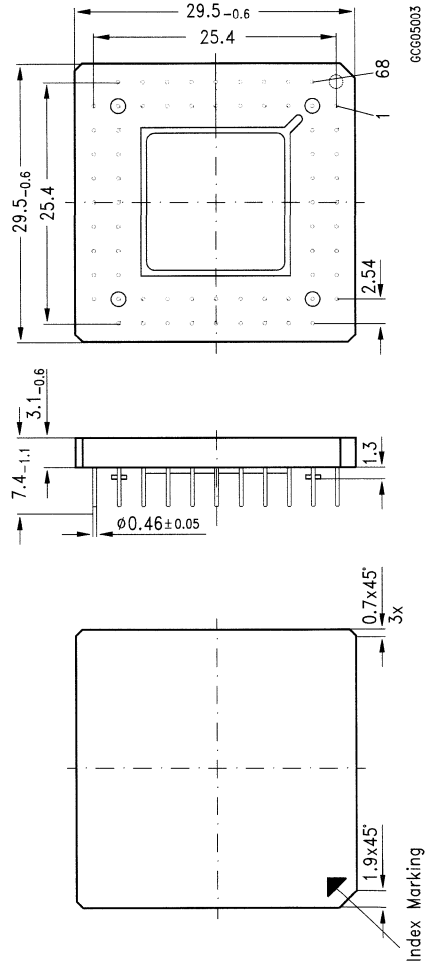
C-DIP-24
Keramik-Gehäuse / Ceramic package
(Ceramic dual in-line package)



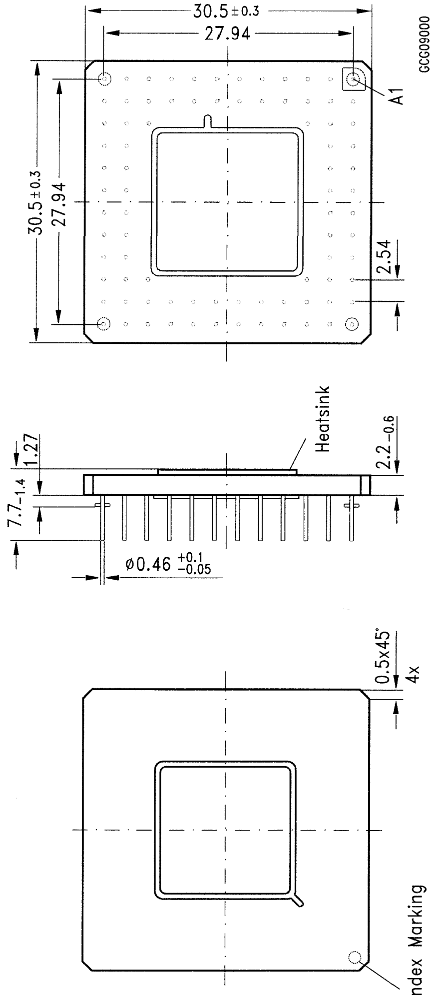
C-QFP-24 (SMD)
Keramik-Gehäuse / Ceramic package
(Ceramic quad flat package)



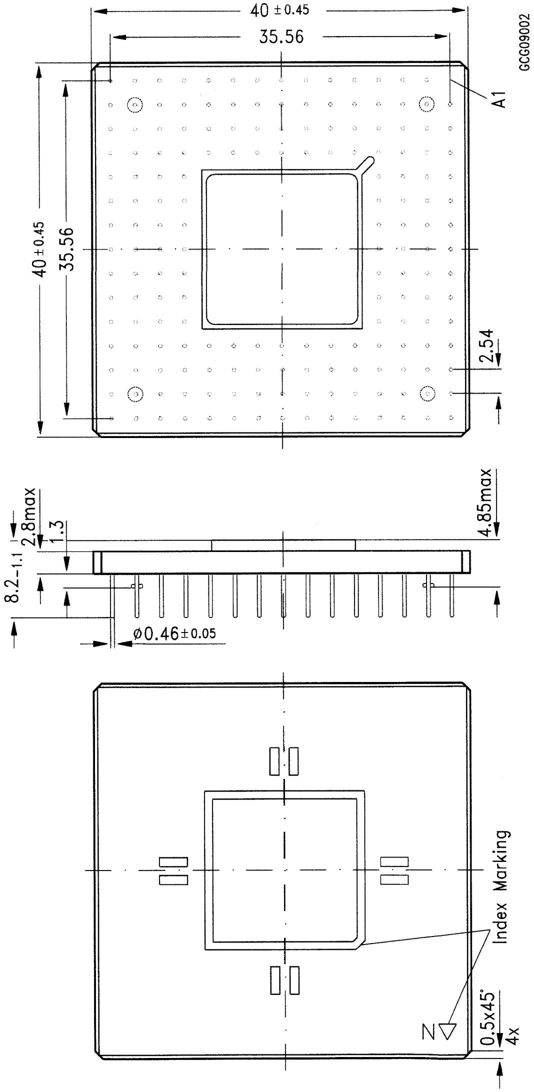
C-PGA-68
Keramik-Gehäuse / Ceramic package
(Ceramic pin grid array)



C-PGA-84
Keramik-Gehäuse / Ceramic package
(Ceramic pin grid array)

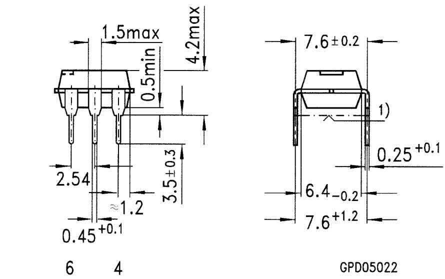


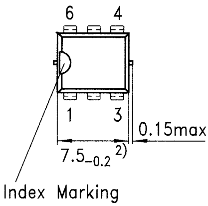
C-PGA-175
Keramik-Gehäuse / Ceramic package
(Ceramic pin grid array)



10

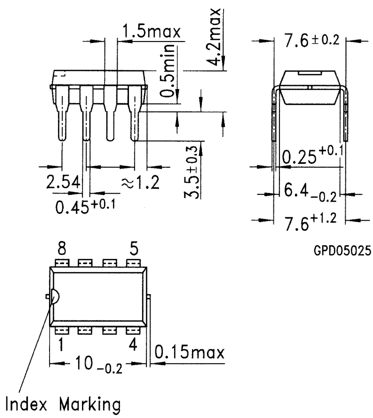
P-DIP-6-1
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



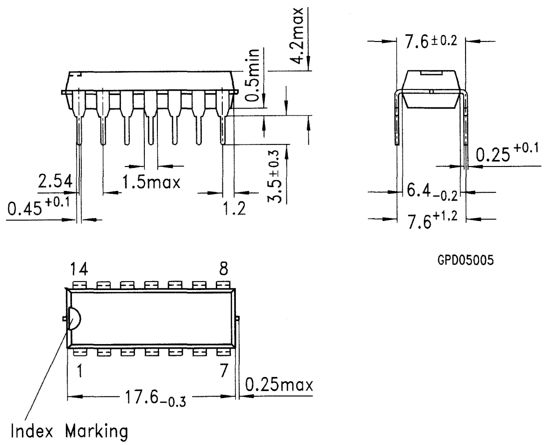


1) — · — Clearance/creepage distance
7.2min for SIPMOS Devices
2) $8.7_{-0.2}$ for SIPMOS Devices

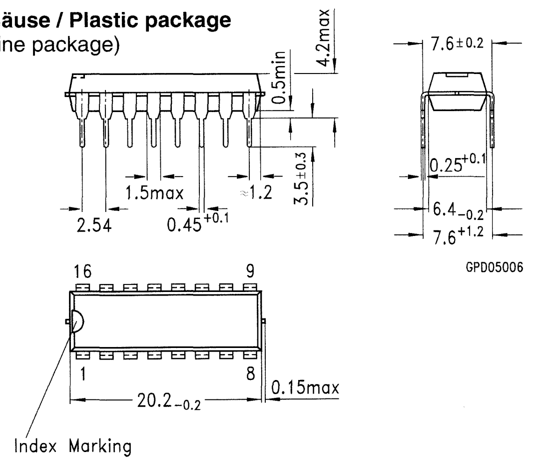
P-DIP-8
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



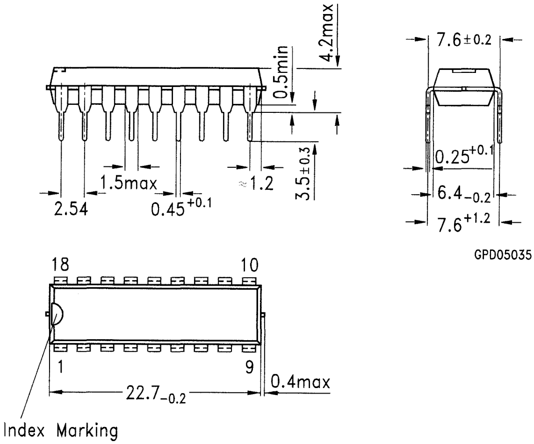
P-DIP-14-1
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



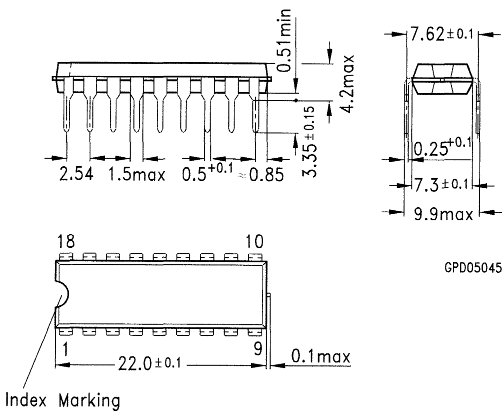
P-DIP-16
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



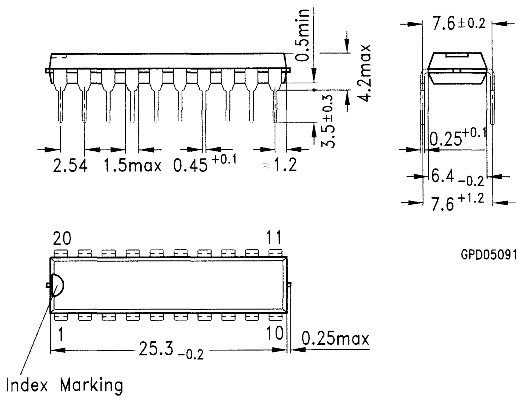
P-DIP-18-1
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



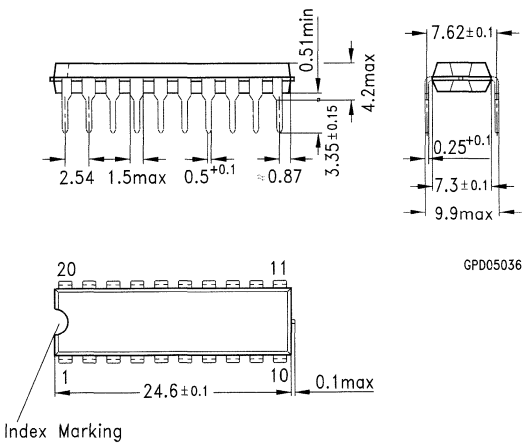
P-DIP-18-2
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



P-DIP-20-1
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)

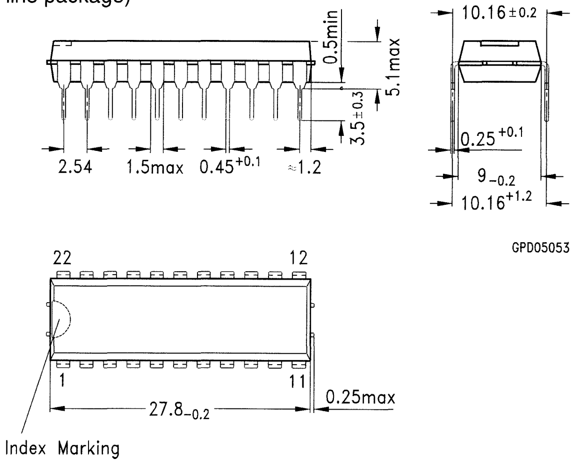


P-DIP-20-2
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)

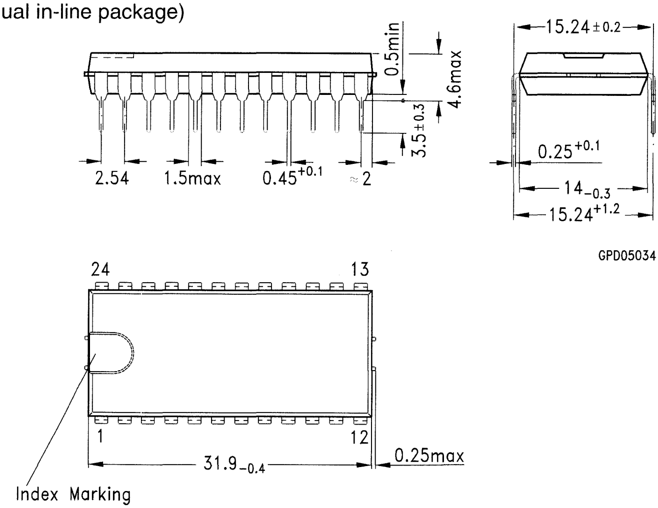


10

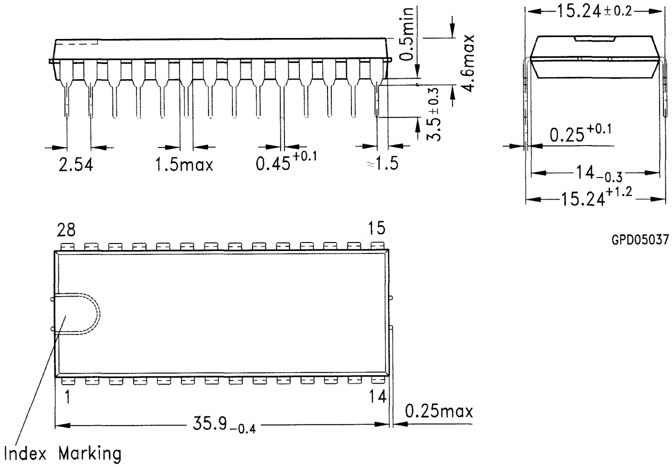
P-DIP-22
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



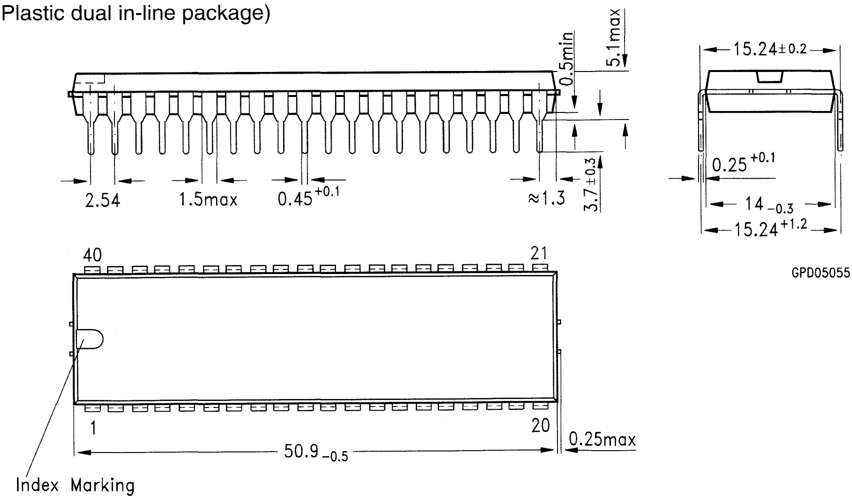
P-DIP-24
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



P-DIP-28
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)

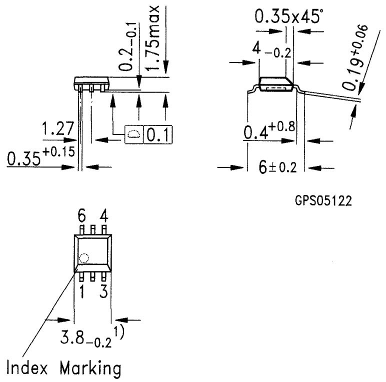


P-DIP-40
Kunststoff-Gehäuse / Plastic package
(Plastic dual in-line package)



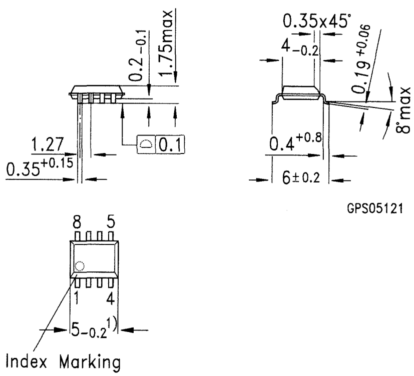
10

P-DSO-6 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



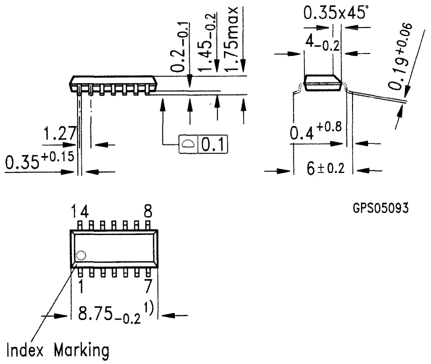
1) Does not include plastic or metal protrusions of 0.15max per side

P-DSO-8-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



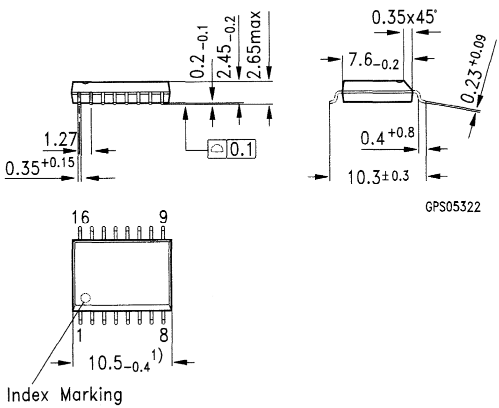
1) Does not include plastic or metal protrusions of 0.15max per side

P-DSO-14-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



1) Does not include plastic or metal protrusions of 0.15max per side

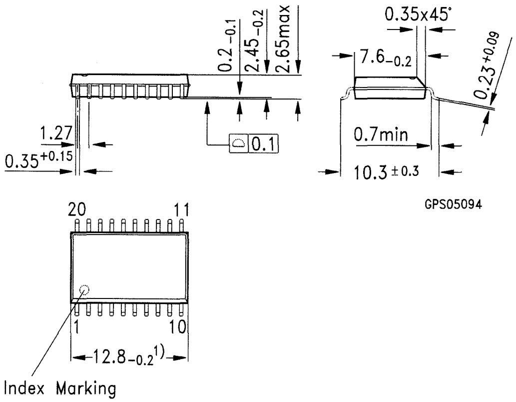
P-DSO-16-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



1) Does not include plastic or metal protrusions of 0.15 max per side

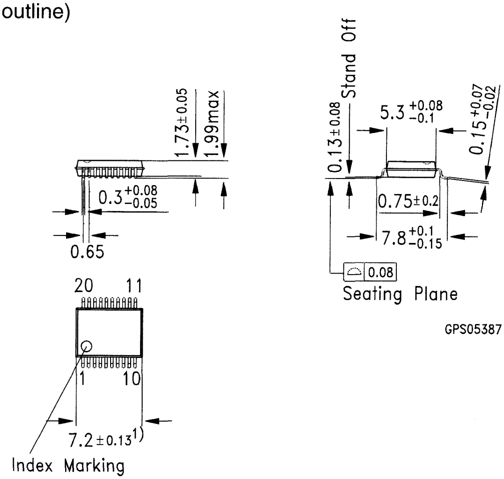
10

P-DSO-20-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



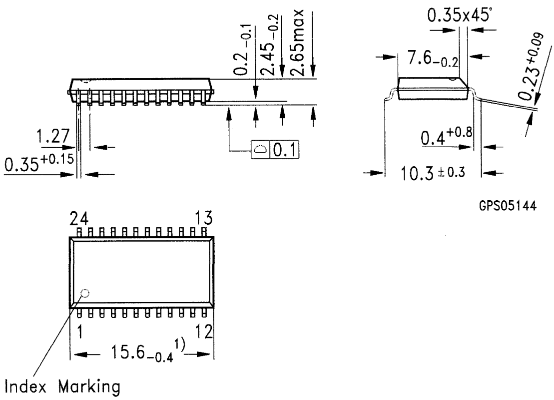
1) Does not include plastic or metal protrusions of 0.15max per side

P-DSO-20-4 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



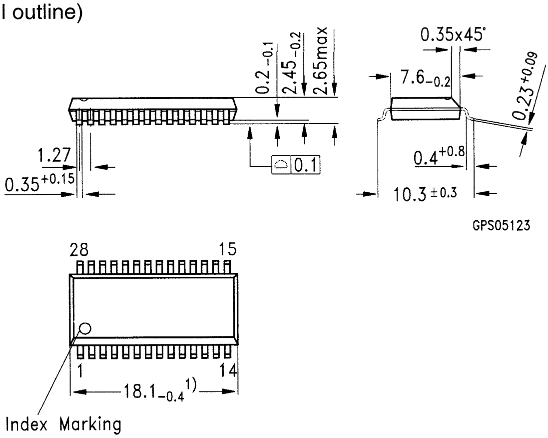
1) Does not include plastic or metal protrusions of 0.15 per side

P-DSO-24-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



1) Does not include plastic or metal protrusions of 0.15max per side

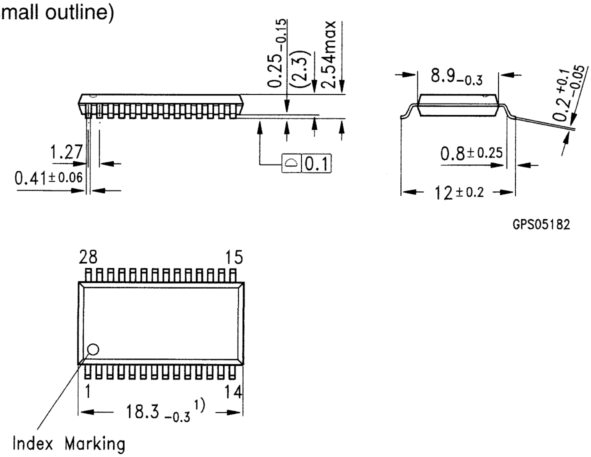
P-DSO-28-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



1) Does not include plastic or metal protrusions of 0.15max per side

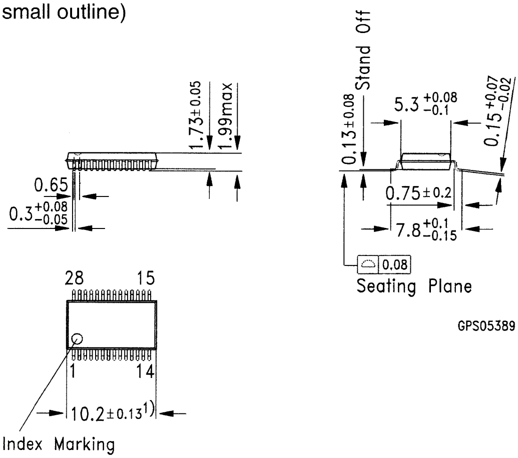
10

P-DSO-28-3 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



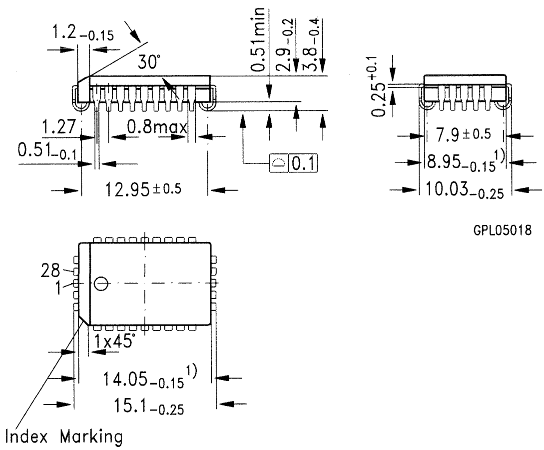
1) Does not include plastic or metal protrusions of 0.25max per side

P-DSO-28-4 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic dual small outline)



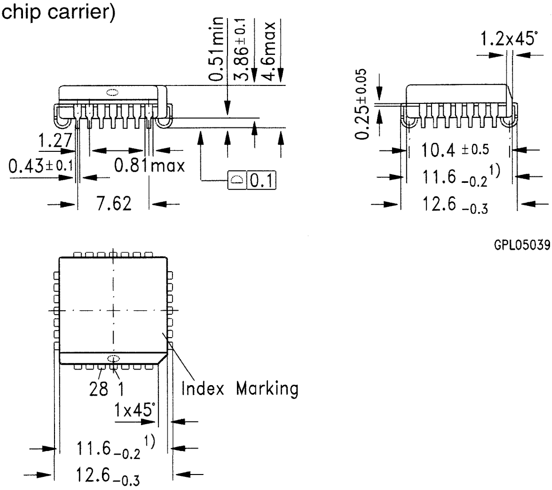
1) Does not include plastic or metal protrusions of 0.15max per side

P-LCC-28-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic leaded chip carrier)



1) Does not include plastic or metal protrusions of 0.15max per side

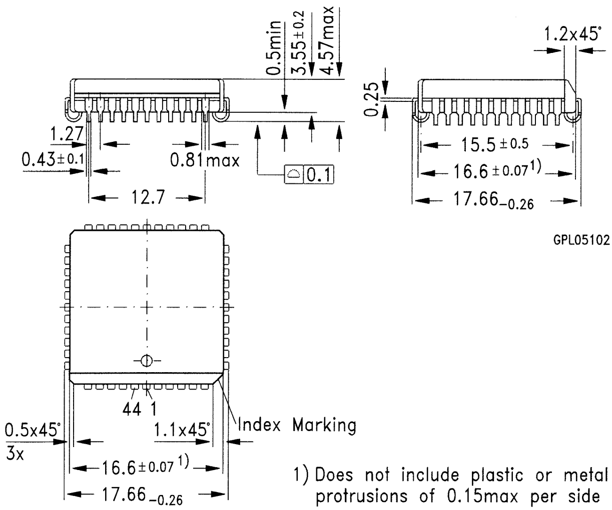
P-LCC-28-2 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic leaded chip carrier)



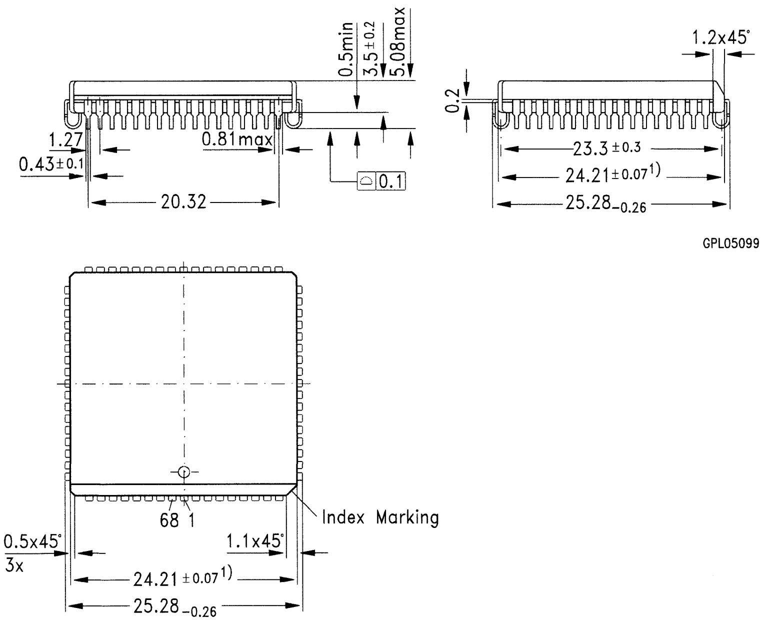
1) Does not inlude plastic or metal protrusions of 0.25max per side

10

P-LCC-44 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic leaded chip carrier)

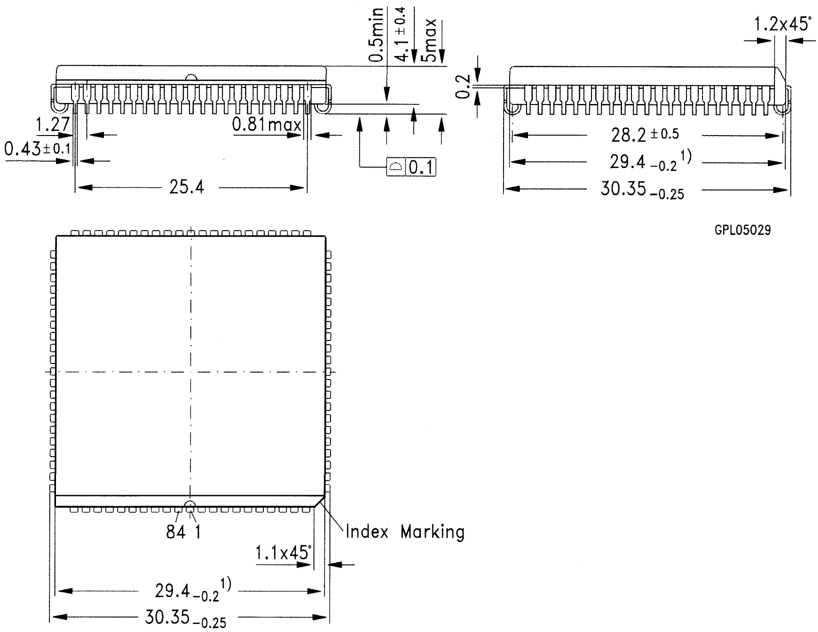


P-LCC-68 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic leaded chip carrier)



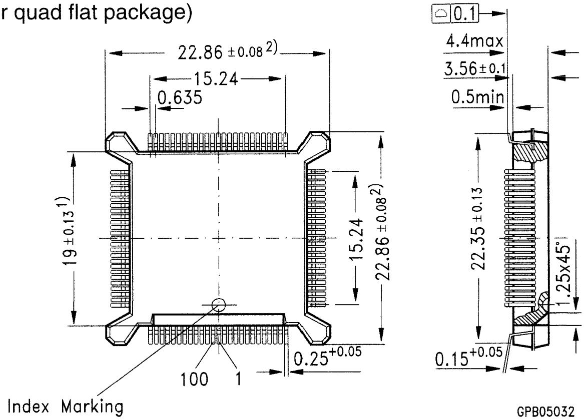
1) Does not include plastic or metal protrusions of 0.15max per side

P-LCC-84 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic leaded chip carrier)



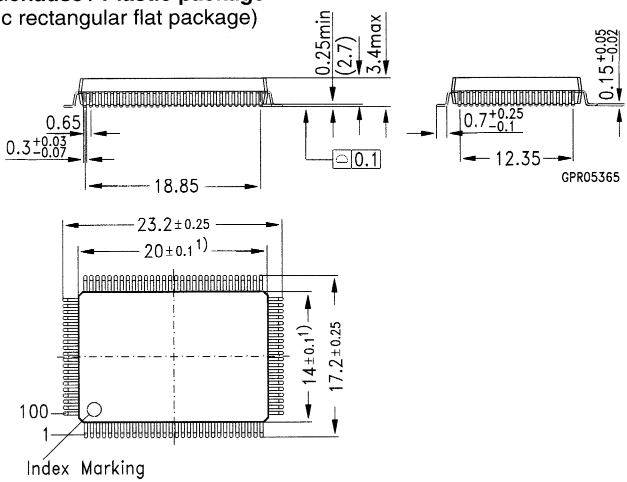
1) Does not include plastic or metal protrusions of 0.15max per side

P-BQFP-100 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic bumper quad flat package)



1) without plastic or metal protrusions of 0.18max per side
2) without plastic or metal protrusions of 0.25max per side

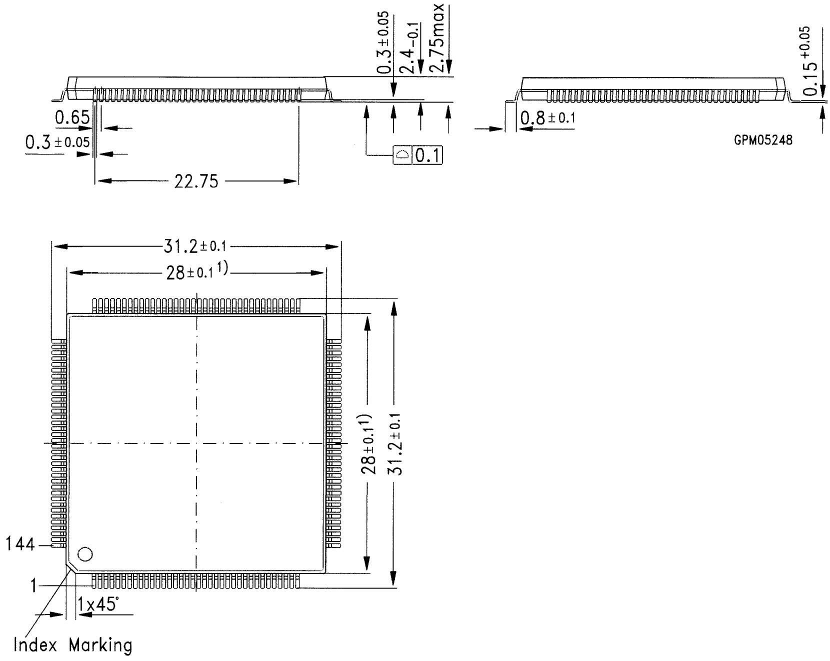
P-MRFP-100 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic metric rectangular flat package)



1) Does not include plastic or metal protrusions of 0.25max per side

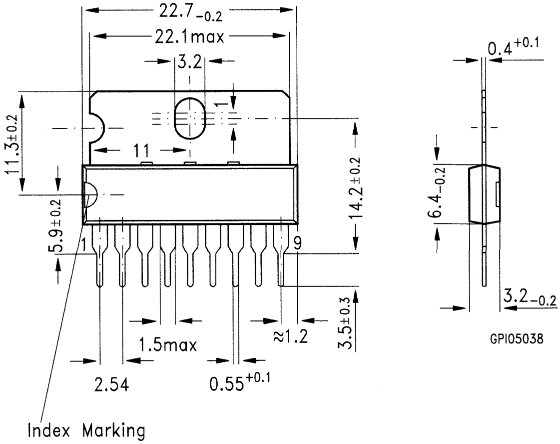
10

P-MQFP-144-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic metric quad flat package)

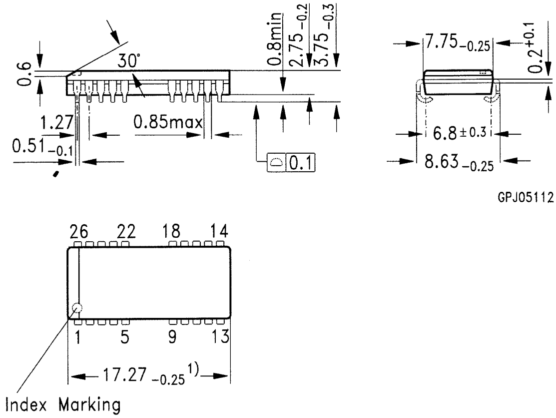


1) Does not include plastic or metal protrusions of 0.25max per side

P-SIP-9
Kunststoff-Gehäuse / Plastic package
(Plastic single in-line package)

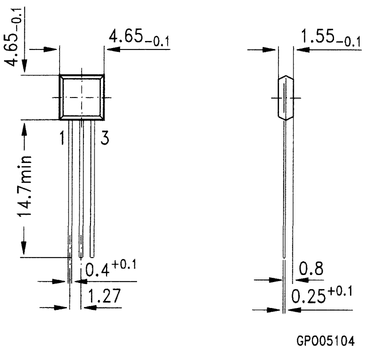


P-SOJ-26 / 20-1 (SMD)
Kunststoff-Gehäuse / Plastic package
(Plastic small outline j-leaded)

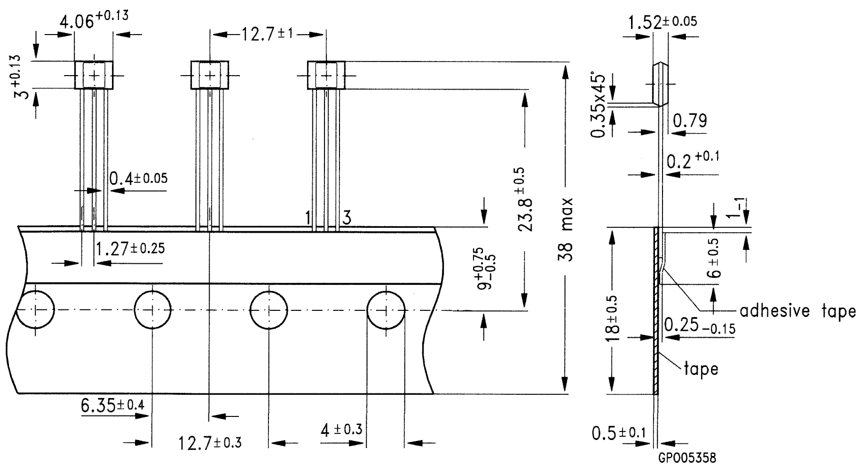


1) Does not include plastic or metal protrusions of 0.15max per side

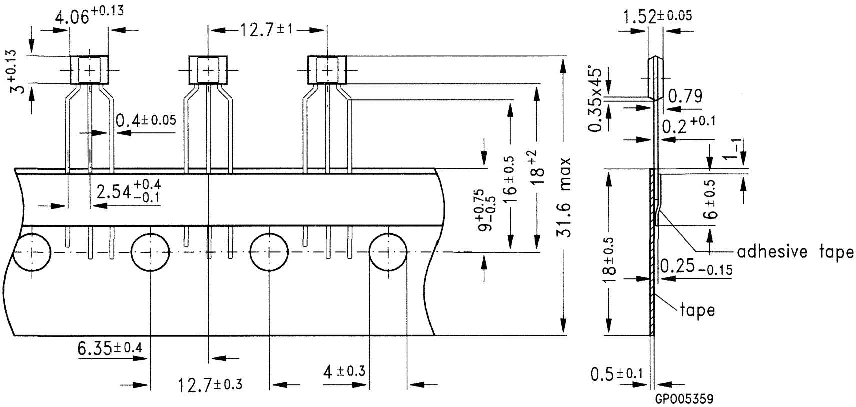
P-SSO-3-1
Kunststoff-Gehäuse / Plastic package
(Plastic single small outline)



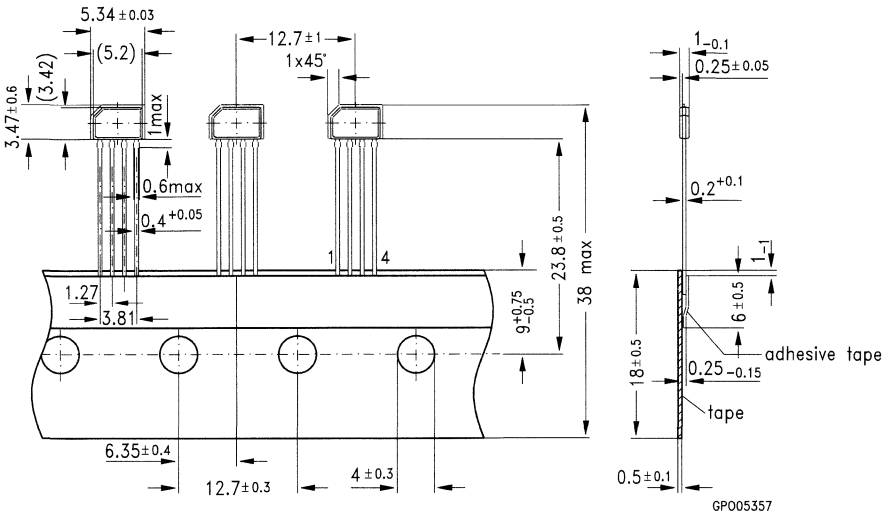
P-SSO-3-2
Kunststoff-Gehäuse / Plastic package
(Plastic single small outline)



P-SSO-3-3
Kunststoff-Gehäuse / Plastic package
(Plastic single small outline)

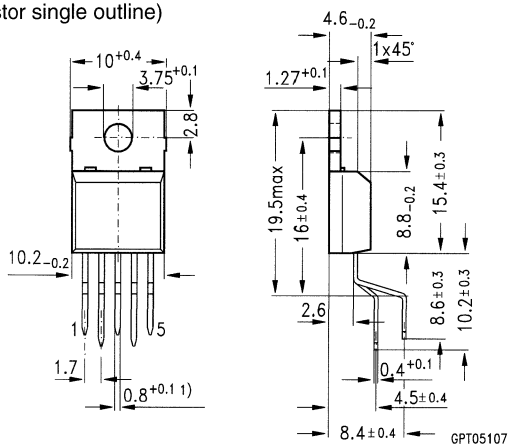


P-SSO-4
Kunststoff-Gehäuse / Plastic package
(Plastic single small outline)



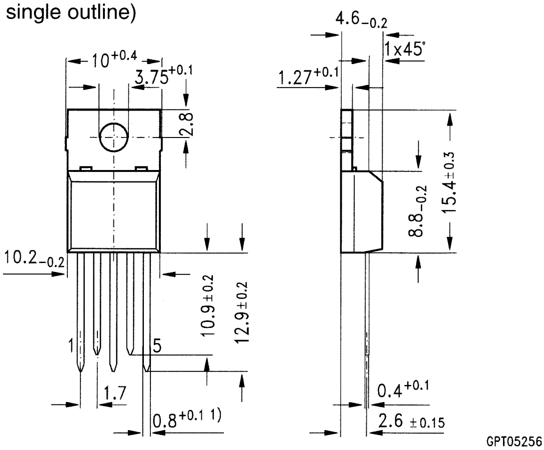
10

P-TO220-5-1
Kunststoff-Gehäuse / Plastic package
(Plastic transistor single outline)



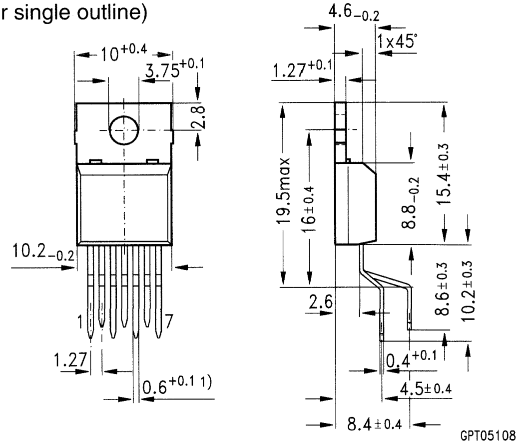
1) $1_{-0.15}$ at dam bar (max 1.8 from body)
1) $1_{-0.15}$ im Dichtstegbereich (max 1.8 vom Körper)

P-TO220-5-2
Kunststoff-Gehäuse / Plastic package
(Plastic transistor single outline)



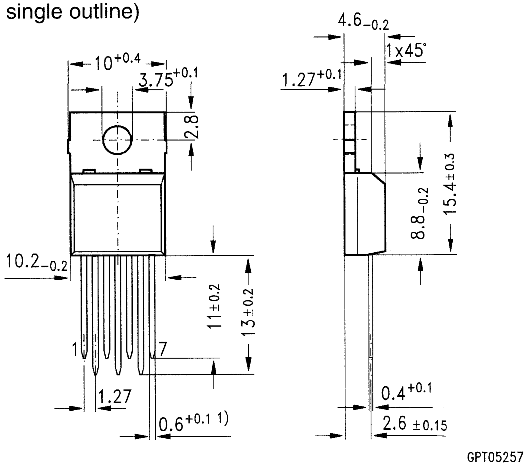
1) $1_{-0.15}$ at dam bar (max 1.8 from body)
1) $1_{-0.15}$ im Dichtstegbereich (max 1.8 vom Körper)

P-TO220-7-1
Kunststoff-Gehäuse / Plastic package
(Plastic transistor single outline)



1) $0.75_{-0.15}$ at dam bar (max 1.8 from body)
1) $0.75_{-0.15}$ im Dichtstegbereich (max 1.8 vom Körper)

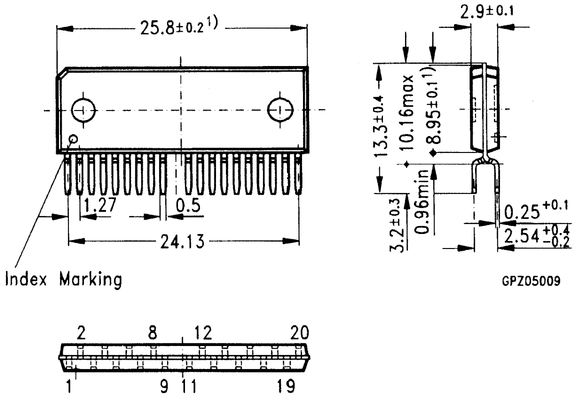
P-TO220-7-2
Kunststoff-Gehäuse / Plastic package
(Plastic transistor single outline)



1) $0.75_{-0.15}$ at dam bar (max 1.8 from body)
1) $0.75_{-0.15}$ im Dichtstegbereich (max 1.8 vom Körper)

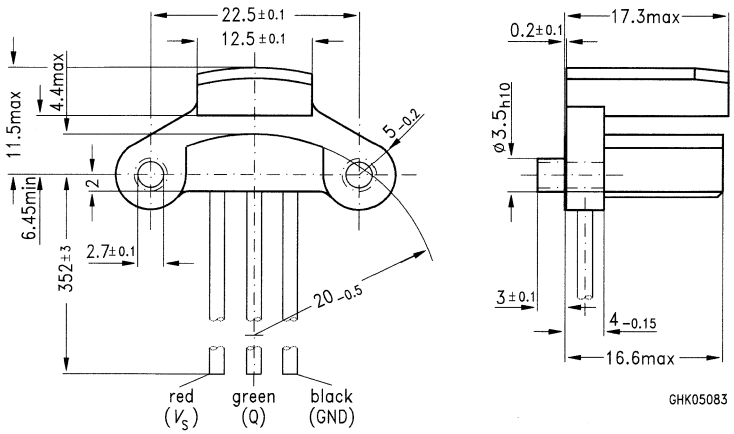
10

P-ZIP-20 / 19
Kunststoff-Gehäuse / Plastic package
(Plastic zigzag in-line package)

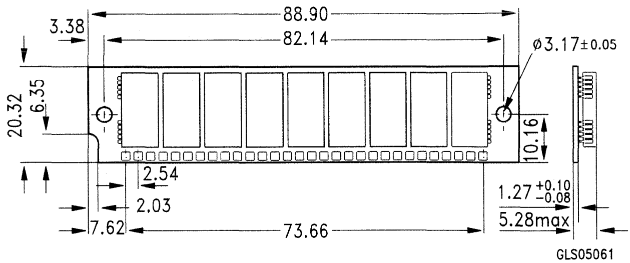


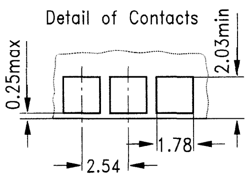
1) Does not include plastic or metal protrusions of 0.15max per side

P-HKZ-3-1
Kunststoff-Sondergehäuse / Plastic special package



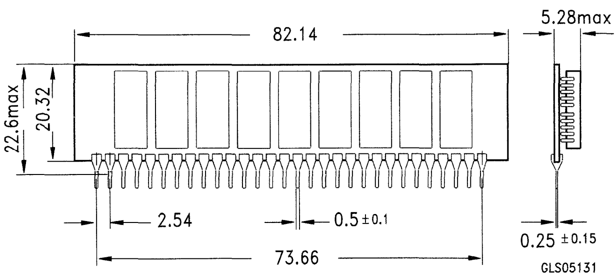
L-SIM-30-3
Modul-Gehäuse / Module package
(Single in-line memory module)





Tolerances : ±0.13 unless otherwise specified

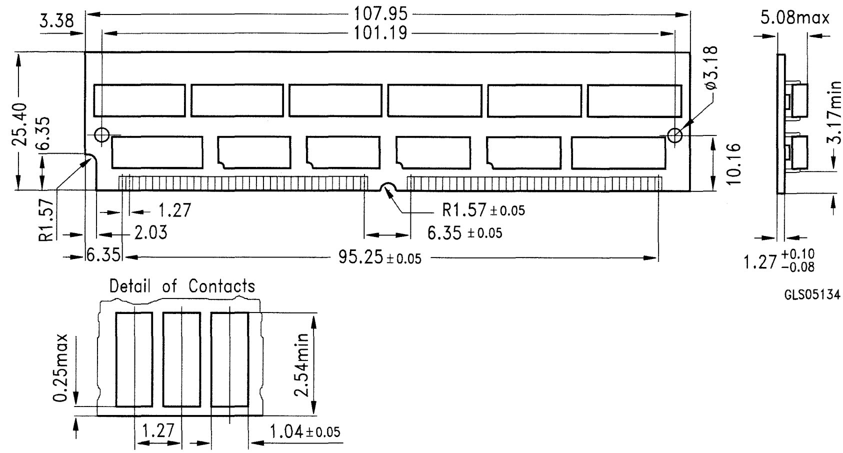
L-SIM-30-4
Modul-Gehäuse / Module package
(Single in-line memory module)



Tolerances : ±0.13 unless otherwise specified

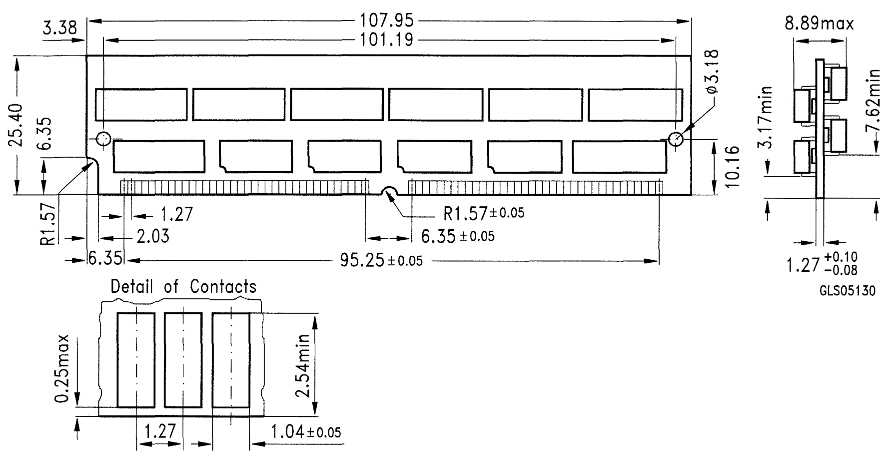
10

L-SIM-72-1
Modul-Gehäuse / Module package
(Single in-line memory module)



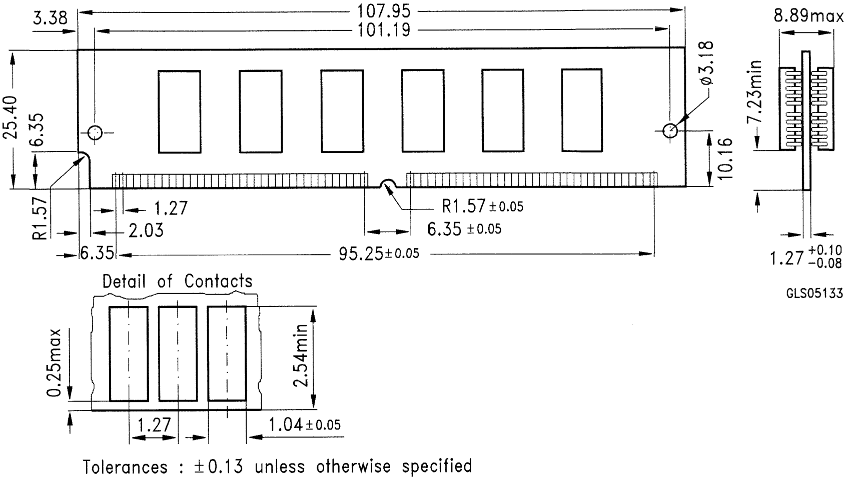
Tolerances : ±0.13 unless otherwise specified

L-SIM-72-2
Modul-Gehäuse / Module package
(Single in-line memory module)

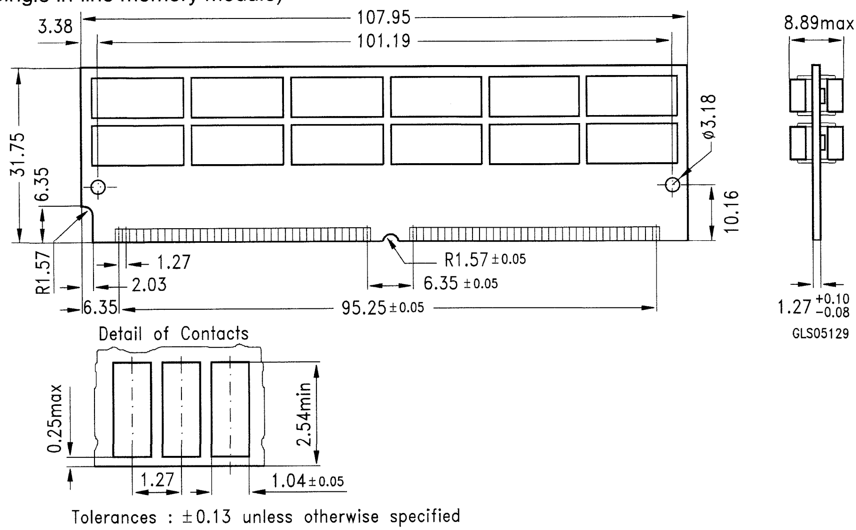


Tolerances : ±0.13 unless otherwise specified

L-SIM-72-3
Modul-Gehäuse / Module package
(Single in-line memory module)



L-SIM-72-4
Modul-Gehäuse / Module package
(Single in-line memory module)



10

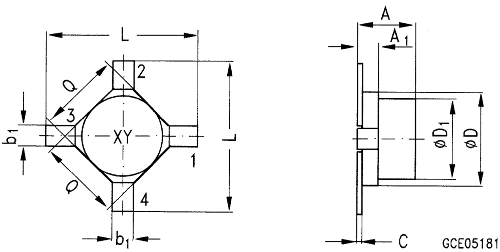
Gehäusebauformen für Einzelhalbleiter

Package Outlines for Small-Signal-Semiconductors

11

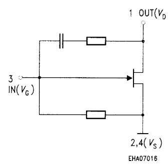
Cerec-X

Bild/Figure 1



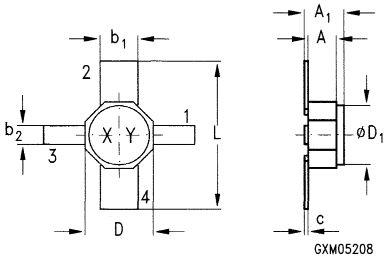
Dim.	Millimeters		
	min.	typ.	max.
A	–	–	1.6
A_1	–	0.6	–
b_1	0.45	0.5	0.55
c	0.1	0.15	0.2
D	2.35	2.55	2.75
D_1	–	2.1	–
L	4.0	4.2	–
Q	2.0	2.2	2.4

Anschluß/Terminal

Pin	1	2	3	4
f	B	E	C	E
b				

Micro-X

Bild/Figure 3



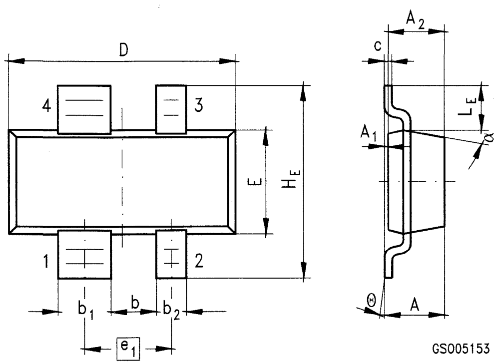
Anschluß/Terminal

Pin	1	2	3	4
	D	S	G	S

Dim.	min.	typ.	max.
A	–	0.76	–
A_1	0.8	1.05	1.3
b_1	0.92	1.02	1.12
b_2	0.4	0.5	0.6
c	0.07	0.1	0.15
D	–	1.78	–
D_1	1.55	1.65	1.75
L	4.0	4.2	–

MW-4

Bild/Figure 4



Anschluß/Terminal

Pin	1	2	3	4
	S	D	S	G

Dim.	Millimeters			Gradient
	min.	typ.	max.	
A	–	–	1.1	–
A_1	–	–	0.1	–
A_2	–	–	1.0	–
b	–	0.6	–	–
b_1	–	0.7	–	–
b_2	–	0.4	–	–
c	0.08	–	0.15	–
D	2.8	–	3.0	–
E	1.2	–	1.4	–
$\lvert e_1 \rvert$	–	1.15	–	–
H_E	–	–	2.6	–
L_E	0.6	–	–	–
α*	–	–	–	max 10°
θ	–	–	–	2° ... 30°

* Note: Applicable to all sides.

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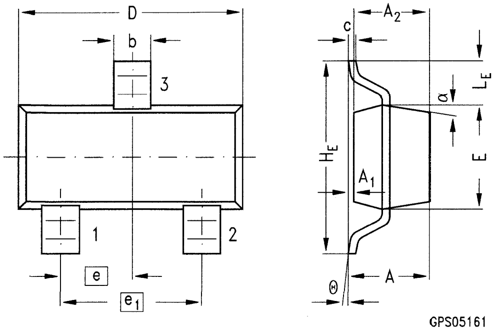
SOT-23

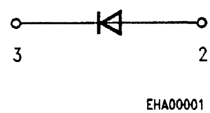
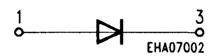
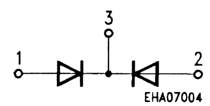
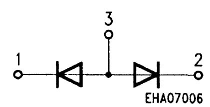
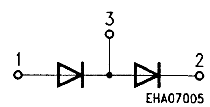
Bild/Figure 5



Dim.	Millimeters			Gradient	Note
	min.	typ.	max.		
A	–	–	1.1	–	–
A_1	–	–	0.1	–	–
A_2	–	–	1.0	–	–
b	0.35	–	0.50	–	–
c	0.08	–	0.15	–	–
D	2.8	–	3.0	–	–
E	1.2	–	1.4	–	–
$\lvert e \rvert$	–	0.95	–	–	–
$\lvert e_1 \rvert$	–	1.9	–	–	–
H_E	–	–	2.6	–	–
L_E	0.6	–	–	–	–
α	–	–	–	max. 10°	1
Θ	–	–	–	2 … 30°	–

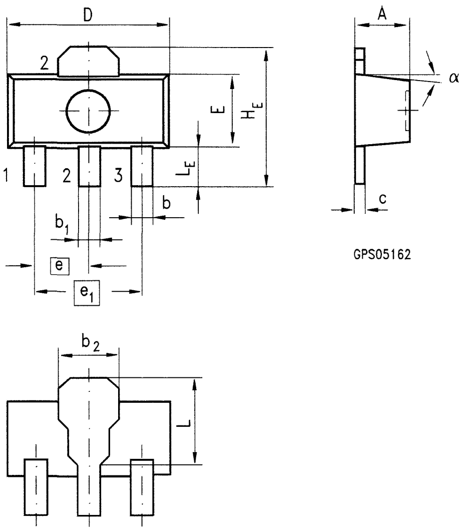
Note: 1) Applicable to all sides

Anschluß/Terminal

a	
b	
c	
d	
e	

Pin	1	2	3
f	B	E	C

SOT-89 **Bild/Figure 6**



Dim.	Millimeters			Gradient	Note
	min.	typ.	max.		
A	–	1.5	–	–	–
b	–	–	0.65	–	–
b_1	–	–	0.65	–	–
b_2	–	1.6	–	–	–
c	0.25	–	–	–	–
D	–	4.5	–	–	–
E	–	–	2.6	–	–
$\lvert e \rvert$	–	1.5	–	–	–
$\lvert e_1 \rvert$	–	3	–	–	–
H_E	–	–	4.25	–	–
L	2.6	–	2.85	–	–
L_E	0.8	–	1.2	–	–
α	–	–	–	max. 10°	1

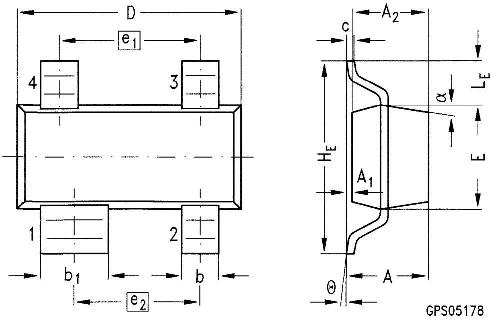
Note: 1) Applicable to all sides

Anschluß/Terminal

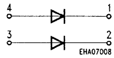
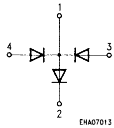
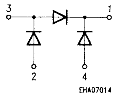
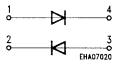
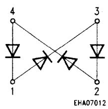
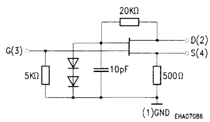
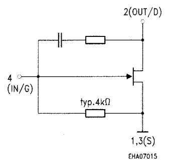
Pin	1	2	3
a	B	C	E

SOT-143

Bild/Figure 7



Anschluß/Terminal

a	
b	
c	
d	
e	
i	
k	

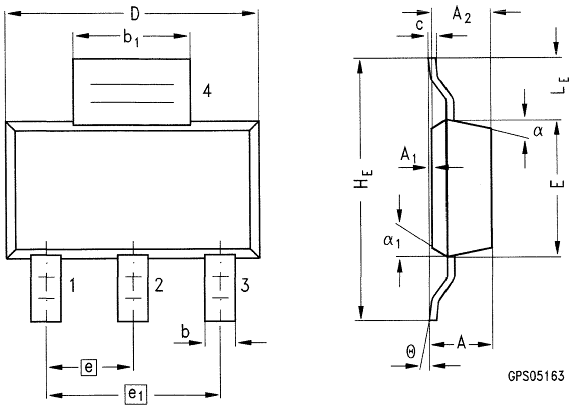
Dim.	Millimeters			Gradient	Note
	min.	typ.	max.		
A	–	–	1.1	–	–
A_1	–	–	0.1	–	–
A_2	–	–	1.0	–	–
b	0.35	0.4	0.50	–	–
b_1	0.75	0.8	0.90		
c	0.08	–	0.15	–	–
D	2.8	–	3.0	–	–
E	1.2	–	1.4	–	–
$\lvert e_1 \rvert$	–	1.9	–	–	–
$\lvert e_2 \rvert$	–	1.7	–	–	–
H_E	–	–	2.6	–	–
L_E	0.6	–	–	–	–
α	–	–	–	max. 10°	1
Θ	–	–	–	2 … 30°	–

Note: 1) Applicable to all sides

Pin	1	2	3	4
f	C	E	B	E
g	S	D	S	G
h	S	D	G_2	G_1

SOT-223

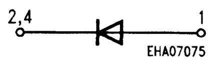
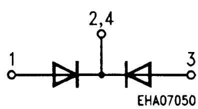
Bild/Figure 8



Dim.	Millimeters			Gradient	Note
	min.	typ.	max.		
A	–	–	1.7	–	–
A_1	0.02	–	0.1	–	–
A_2	–	–	1.6	–	–
b	0.60	–	0.80	–	–
b_1	2.9	–	3.1		
C	0.24	–	0.32	–	–
D	6.3	–	6.7	–	–
E	3.3	–	3.7	–	–
$\|e\|$	–	2.3	–	–	–
$\|e_1\|$	–	4.6	–	–	–
H_E	6.7	–	7.3	–	–
L_E	–	1.7	–	–	–
α	–	–	–	max. 16°	1
α_1	–	–	–	13°	2
Θ	–	–	–	10°	–

Notes: 1) Applicable to case top
2) Applicable to case bottom

Anschluß/Terminal

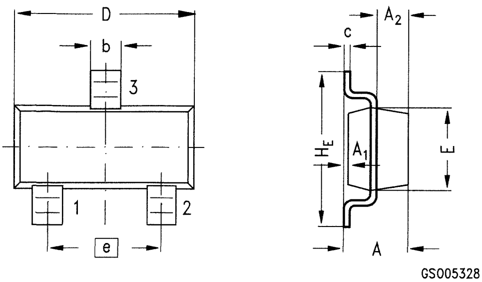
a	
b	

Pin	1	2	3	4
c	B	C	E	C
d	E	B	E	C
e	G	S	D	S

11

SOT-323

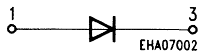
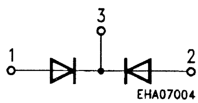
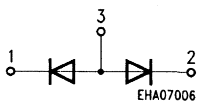
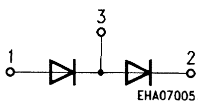
Bild/Figure 9



Dim.	Millimeters		
	min.	typ.	max.
A	0.8	0.9	1.0
A_1	–	0	0.1
A_2	–	0.2	–
b	–	0.3	0.4
c	0.1	0.15	0.25
D	1.8	2.0	2.2
E	1.15	1.25	1.35
lel	1.2	1.3	1.4
H_E	2.0	2.1	2.2

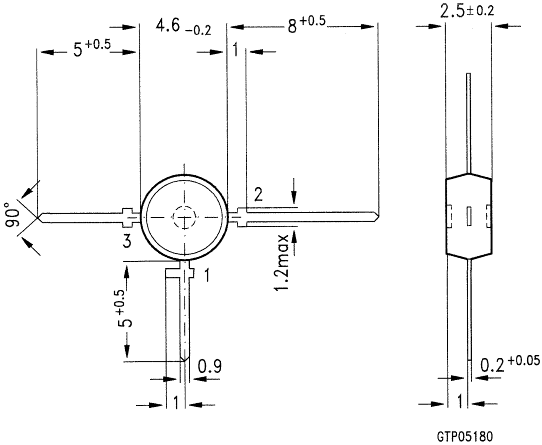
Anschluß/Terminal

Pin	1	2	3
a	B	E	C

b	
c	
d	
e	

T-plast

Bild/Figure 10



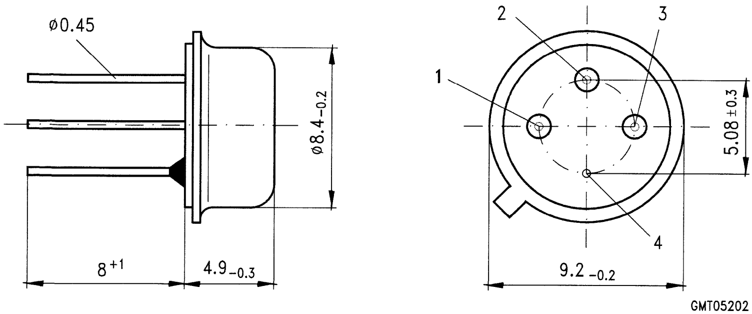
Anschluß/Terminal

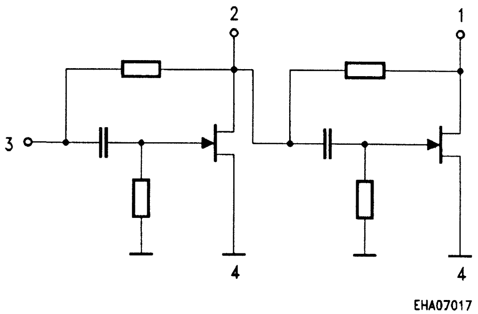
Pin	1	2	3
	E	C	B

11

TO-12

Bild/Figure 11

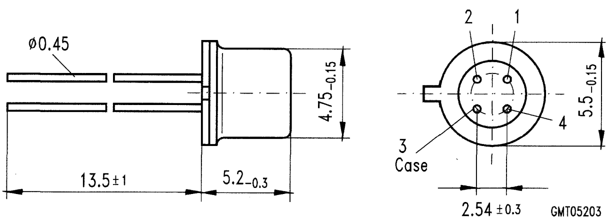




Pin	1	2	3	4
	RF output V_S	Interstage V_S	RF input	RF and DC ground, case

TO-72

Bild/Figure 12

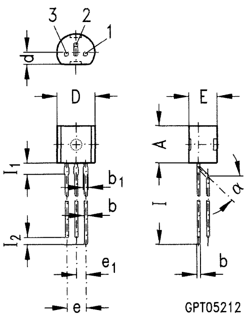


Anschluß/Terminal

Pin	1	2	4
a	E	B	C
b	B	E	C

TO-92

Bild/Figure 13



Dim.	Millimeters			Gradient
	min.	typ.	max.	
A	5.0	5.2	–	–
b	–	0.4	0.45	–
b_1	–	0.6	0.62	–
E	4.0	4.2	–	–
lel	–	2.54	–	–
le_1l	–	1.27	–	–
D	5.0	5.2	–	–
d	1.5	1.6	–	–
l	13.5	14.5	–	–
l_1	–	1.5	1.7	–
l_2	0.9	1.0	1.1	–
α	–	–	–	45°

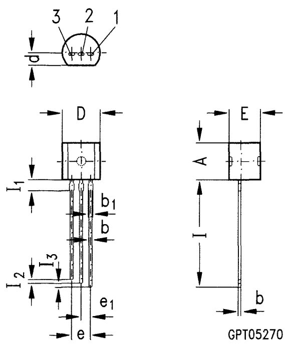
Anschluß/Terminal

Pin	1	2	3
a	C	B	E
b	E	C	B

11

TO-92

Bild/Figure 14



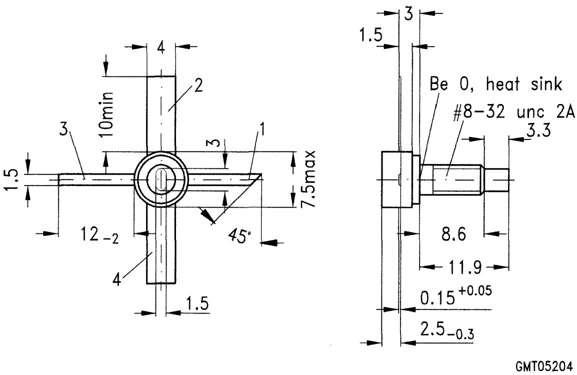
Dim.	Millimeters		
	min.	typ.	max.
A	5.0	5.2	–
b	–	0.4	0.45
b_1	–	0.6	0.8 (0.6$^{+0.2}$)
E	4.0	4.2	–
I e I	–	2.54	–
I e_1I	–	1.27	–
D	5.0	5.2	–
d	1.5	1.6	–
l	13.5	14.5	–
l_1	–	1.5	1.7
l_2	0.4	0.5	0.6
l_3	0.4	0.5	0.6

Anschluß/Terminal

Pin	1	2	3
a	E	C	B
b	E	B	C

TO-117 (mit Schraube / with screw)

Bild/Figure 15



Anschluß/Terminal

Pin	1	2	3	4
	C	E	B	E

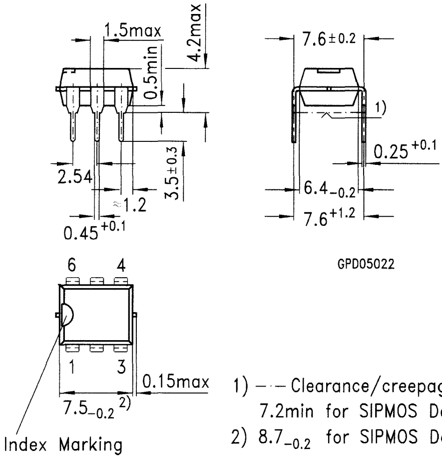
Gehäusebauformen für SIPMOS-Halbleiter

Package Outlines for SIPMOS Semiconductors

12

P-DIP-6-1 (ohne VDE-Zeichen/without VDE-Sign)
P-DIP-6-1 (**Option 1**, mit VDE-Zeichen/with VDE-Sign)

Bild/Figure 20



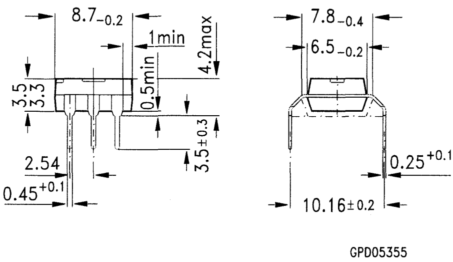
1) – · – Clearance/creepage distance 7.2min for SIPMOS Devices
2) $8.7_{-0.2}$ for SIPMOS Devices

Gewicht etwa 0,6 g
Approx. weight 0.6 g

Pin	1	2	3	4	5	6
–	A	C	–	A1	–	A2

P-DIP-6-2 (Option 6)

Bild/Figure 21



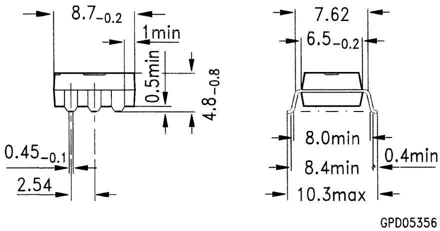
– · · – Luft-/Kriechstrecke 8.0 min
– · · – Clearance-/creepage distance 8.0 min.

Gewicht etwa 0,6 g
Approx. weight 0.6 g

Pin	1	2	3	4	5	6
–	A	C	–	A1	–	A2

P-DIP-6-3 (Option 7)

Bild/Figure 22



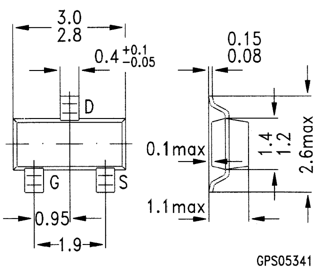
— · — Luft-/Kriechstrecke 8.0 min
— · — Clearance-/creepage distance 8.0 min.

Gewicht etwa 0,6 g
Approx. weight 0.6 g

Pin	1	2	3	4	5	6
–	A	C	–	A1	–	A2

SOT-23

Bild/Figure 23

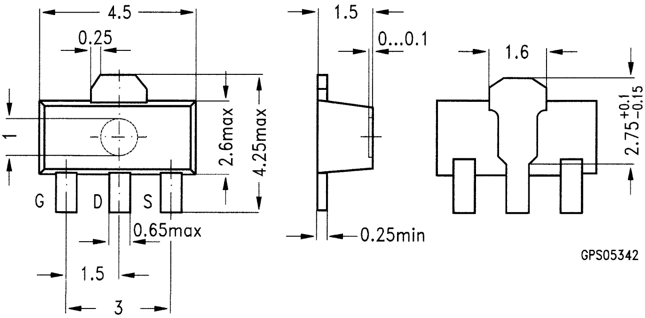


Gewicht etwa 0,02 g
Approx. weight 0.02 g

12

SOT-89

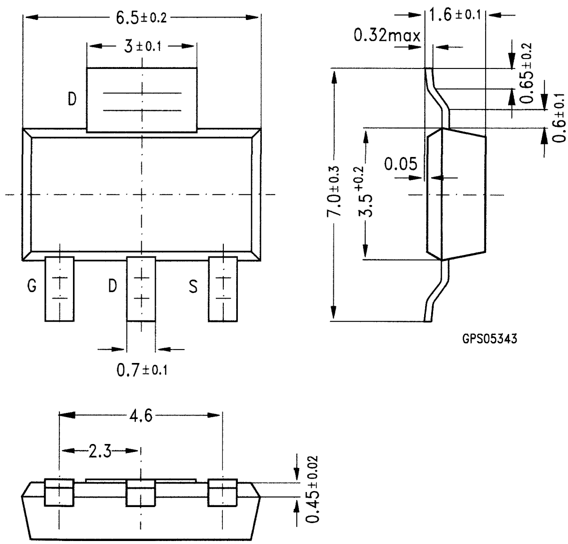
Bild/Figure 24



Gewicht etwa 0,1 g
Approx. weight 0.1 g

SOT-223

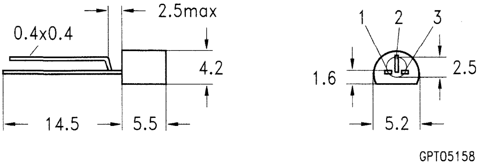
Bild/Figure 25



Gewicht etwa 0,1 g
Approx. weight 0.1 g

TO-92

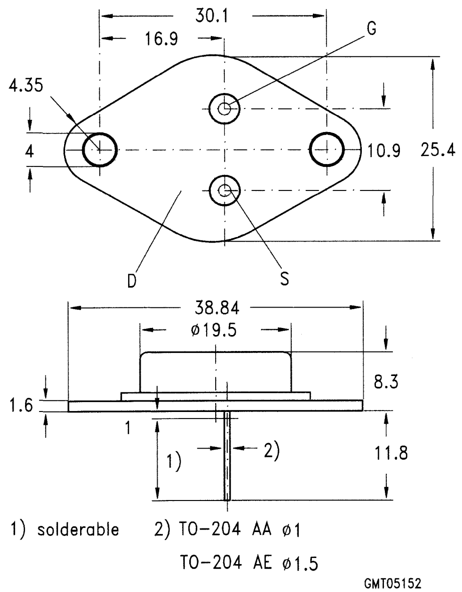
Bild/Figure 26



Pin	1	2	3
a	S	G	D
b	G	D	S
c	D	G	S

TO-204 A/AE

Bild/Figure 27



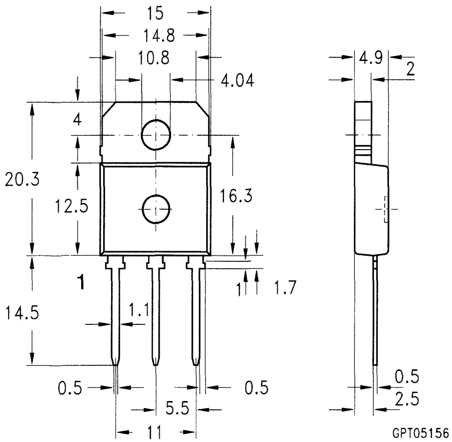
TO-204 AA	∅	1,0
TO-204 AE	∅	1,5

Gewicht etwa 12 g
Approx. weight 12 g

12

TO-218 AA (TOP 3)

Bild/Figure 28

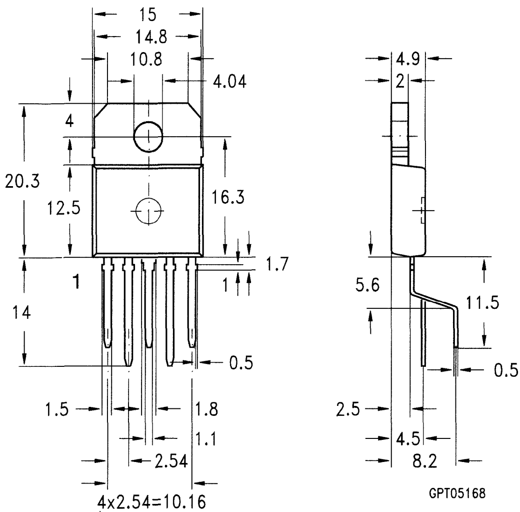


Gewicht etwa 4,5 g
Approx. weight 4.5 g

Pin	1	2	3
a	G	D	S
b	B	C	E

TO-218 AB/5

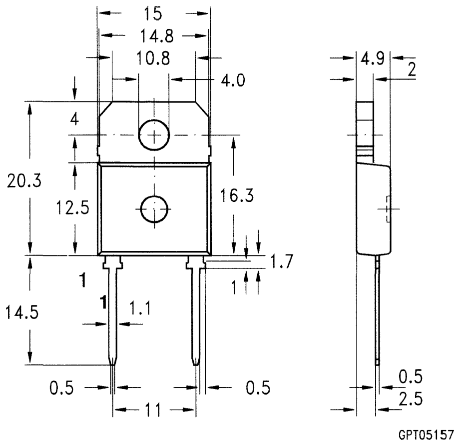
Bild/Figure 29



Gewicht etwa 4,5 g
Approx. weight 4,5 g

Pin	1	2	3	4	5
	GND	IN	V_{bb}	ST	OUT

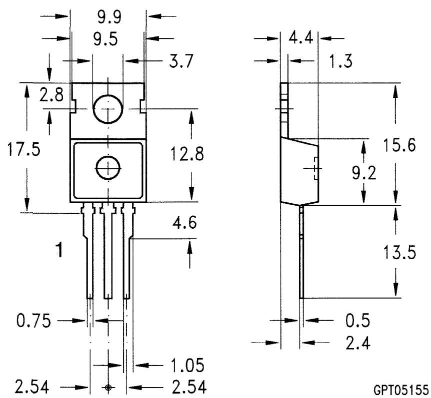
TO-218 AD **Bild/Figure 30**



Gewicht etwa 4,5 g
Approx. weight 4.5 g

Pin	1	2
	C	A

P-TO220-3-1 (T0-220 AB) **Bild/Figure 31**



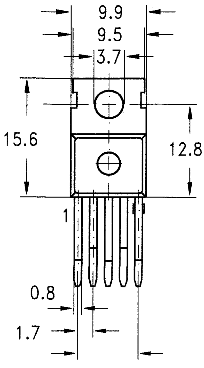
Gewicht etwa 2 g
Approx. weight 2 g

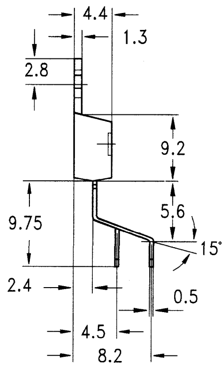
Pin	1	2	3
a	G	D	S
b	B	C	E

12

P-TO-220-5-4 (T0-220 AB/5)

Bild/Figure 32





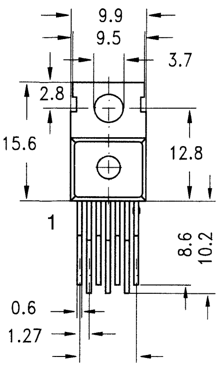
GPT05165

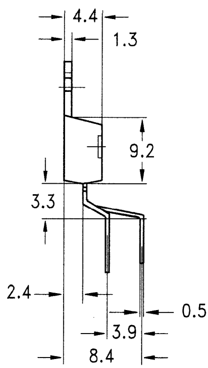
Gewicht etwa 4,5 g
Approx. weight 4.5 g

Pin	1	2	3	4	5
–	GND	IN	V_{bb}	St	OUT

P-TO220-7-3 (T0-220 AB/7)

Bild/Figure 33





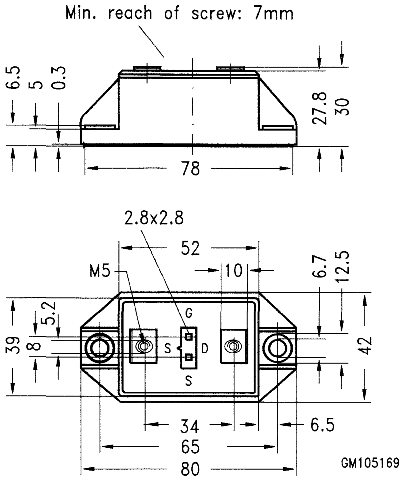
GPT05167

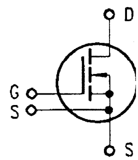
Gewicht etwa 4,5 g
Approx. weight 4,5 g

Pin	1	2	3	4	5	6	7
–	GND	V_C	V_{REF}	V_{bb}	C_1	C_B	OUT

M1

Bild/Figure 34



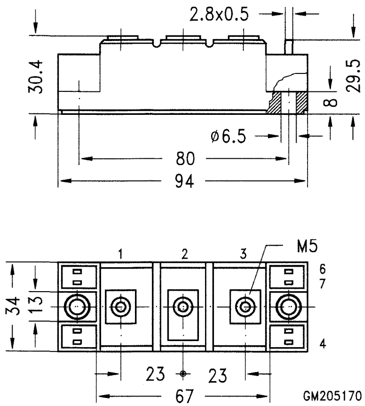


SIS00019

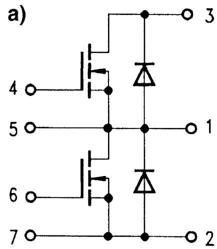
Gewicht etwa 150 g
Approx. weight 150 g

M2

Bild/Figure 35

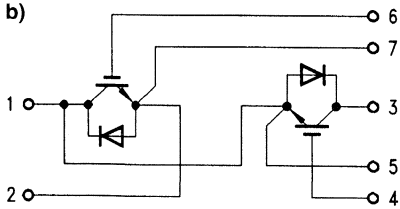


a)



SIS00020

b)

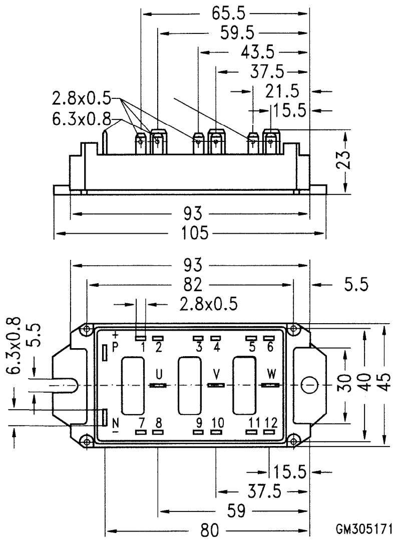


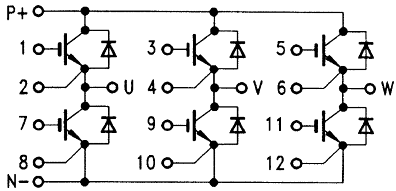
SIS00021

Gewicht etwa 250 g
Approx. weight 250 g

12

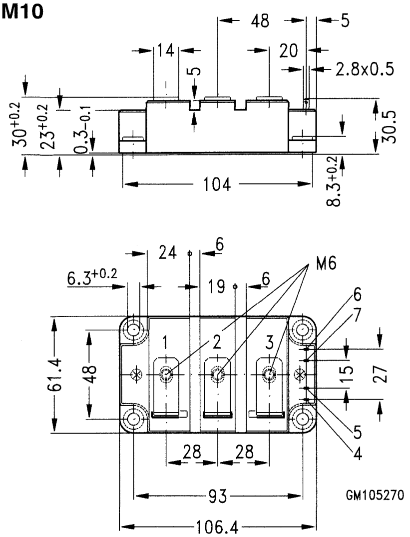
M3 **Bild/Figure 36**

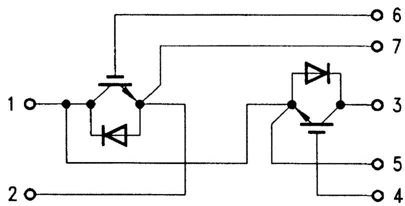




Gewicht etwa 190 g
Approx. weight 190 g

M10 **Bild/Figure 37**

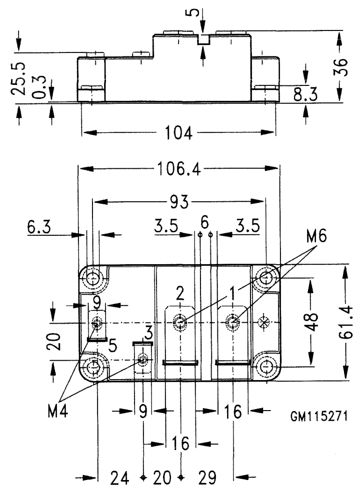


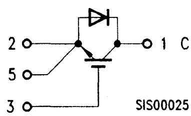


Gewicht etwa 420 g
Approx. weight 420 g

M11

Bild/Figure 38

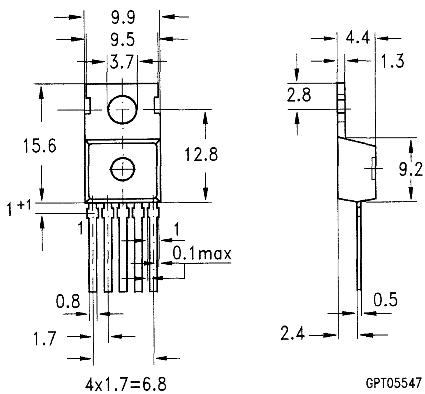




Gewicht etwa 420 g
Approx. weight 420 g

P-T0-220-5-4 (T0-220 AB/5, Option E3043)

Bild/Figure 39

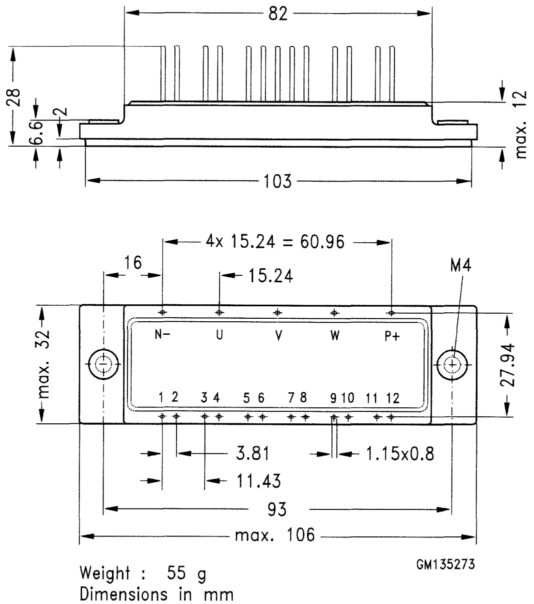


Gewicht etwa 4,5 g
Approx. weight 4,5 g

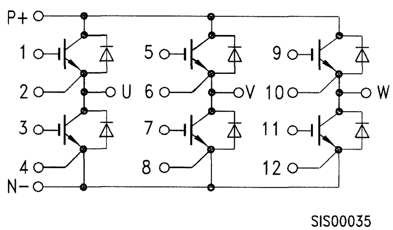
Pin	1	2	3	4	5
–	GND	IN	V_{bb}	St	OUT

12

M13 **Bild/Figure 40**



Gewicht etwa – 55 g
Approx. weight – 55 g



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Typenverzeichnis
Bestellnummernverzeichnis

Summary of Types
Summary of Ordering Codes

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Typenverzeichnis, alphanumerisch geordnet
Summary of Types in Alphanumerical Order

Typenverzeichnis, alphanumerisch geordnet
Summary of Types in Alphanumerical Order

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BC 546 B	Q62702-C687-V2	53	BCP 49	Q62702-C2137	64
BC 547 B	Q62702-C688-V2	53	BCP 51	Q62702-C2107	60
BC 548 B	Q62702-C689-V2	53	BCP 51-10	Q62702-C2109	60
BC 548 C	Q62702-C689-V3	53	BCP 51-16	Q62702-C2110	60
BC 549 C	Q62702-C690-V2	53	BCP 52	Q62702-C2146	60
BC 550 C	Q62702-C691-V2	53	BCP 52-10	Q62702-C2112	60
BC 556 B	Q62702-C692-V2	54	BCP 52-16	Q62702-C2113	60
BC 557 B	Q62702-C693-V2	54	BCP 53	Q62702-C2147	60
BC 558 B	Q62702-C694-V2	54	BCP 53-10	Q62702-C2115	60
BC 558 C	Q62702-C694-V3	54	BCP 53-16	Q62702-C2116	60
BC 559 C	Q62702-C695-V3	54	BCP 54	Q62702-C2117	60
BC 560 B	Q62702-C696-V2	54	BCP 54-10	Q62702-C2119	60
BC 560 C	Q62702-C696-V3	54	BCP 54-16	Q62702-C2120	60
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BC 637	Q68000-A2285	53	BCP 55-16	Q62702-C2123	60
BC 638	Q68000-A3366	54	BCP 56	Q62702-C2149	60
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BC 640	Q68000-A3367	54	BCP 56-16	Q62702-C2106	60
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BC 807-40	Q62702-C1721	57	BCR 112	Q62702-C2254	56
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BC 857 C	Q62702-C1851	57	BCV 48	Q62702-C1854	63
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BC 876	Q62702-C943	61	BCW 61B	Q62702-C1585	57
BC 877	Q62702-C854	61	BCW 61C	Q62702-C1478	57
BC 878	Q62702-C942	61	BCW 61D	Q62702-C1556	57
BC 879	Q62702-C855	61	BCW 65B	Q62702-C1612	55
BC 880	Q62702-C941	61	BCW 65C	Q62702-C1479	55
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BCW 67C	Q62702-C1681	58	BFP 183	Q62702-F1319	72
BCW 68G	Q62702-C1322	58	BFP 193	Q62702-F1282	72
BCW 68H	Q62702-C1555	58	BFP 194	Q62702-F1347	73
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BCX 42	Q62702-C1485	58	BFP 22	Q62702-F621	65
BCX 51	Q62702-C1847	59	BFP 23	Q62702-F622	65
BCX 51-10	Q62702-C1831	59	BFP 280	Q62702-F1300	72
BCX 51-16	Q62702-C1857	59	BFP 81	Q62702-F1122	72
BCX 52	Q62702-C1743	59	BFP 93A	Q62702-F1144	72
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BCX 52-16	Q62702-C1900	59	BFQ 181	Q62702-F1295	69
BCX 53	Q62702-C905	59	BFQ 193	Q62702-F1312	69
BCX 53-10	Q62702-C1753	59	BFQ 19S	Q62702-F1088	69
BCX 53-16	Q62702-C1502	59	BFQ 29P	Q62702-F659	70
BCX 54	Q62702-C954	57	BFQ 645	Q62702-F1283	69
BCX 54-10	Q62702-C1861	57	BFQ 69	Q62702-F780	71
BCX 54-16	Q62702-C1731	57	BFQ 70	Q62702-F774	69
BCX 55	Q62702-C1729	57	BFQ 71	Q62702-F775	69
BCX 55-10	Q62702-C1730	57	BFQ 72	Q62702-F776	69
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BF 722	Q62702-F1306	66	BFR 193W	Q62702-F1510	70
BF 723	Q62702-F1309	66	BFR 194	Q62702-F1346	70
BFG 135A	Q62702-F1322	73	BFR 280	Q62702-F1298	70
BFG 193	Q62702-F1291	73	BFR 280W	Q62702-F1494	70
BFG 194	Q62702-F1321	73	BFR 34A	Q62702-F346-S1	71
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BFG 235	Q62702-F1432	73	BFR 91	Q62702-F559	71
BFN 16	Q62702-F885	65	BFR 91A	Q62702-F735	71
BFN 17	Q62702-F884	65	BFR 92P	Q62702-F1050	70
BFN 26	Q62702-F976	65	BFR 92W	Q62702-F1488	70
BFN 27	Q62702-F977	65	BFR 93A	Q62702-F1086	70
BFN 36	Q62702-F1246	66	BFR 93P	Q62702-F1051	70
BFN 37	Q62702-F1304	66	BFR 93W	Q62702-F1489	70
BFN 38	Q62702-F1303	66	BFR 96	Q62702-F516	71
BFN 39	Q62702-F1305	66	BFR 96S	Q68000-A5689	71
BFP 180	Q62702-F1297	72	BFS 17P	Q62702-F940	70

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BFT 65	Q62702-F451	71	BPX 66	Q62702-P80	189
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BFY 90	Q62702-F297	69	BPX 88	Q62702-P33	211
BH 201	Q68000-A8759-F261	274	BPX 89	Q62702-P26	211
BH 701	Q68000-A8760-F261	274	BPX 90 F	Q62702-P928	189
BH 704	Q68000-A8761-F261	274	BPX 90	Q62702-P47	189
BH 705	Q68000-A8762-F261	274	BPX 91 B	Q62702-P48-S	189
BP 103 B	Q62702-P1189	204	BPX 92	Q62702-P49	189
BP 103 B-2	Q62702-P85-S2	204	BPY 11 P IV	Q60215-Y111-S4	186
BP 103 B-3	Q62702-P85-S3	204	BPY 11 P V	Q60215-Y111-S5	186
BP 103 B-4	Q62702-P85-S4	204	BPY 12 H1	Q62702-P1029	189
BP 103	Q62702-P75	204	BPY 12	Q62702-P9	189
BP 103-2	Q62702-P79-S1	204, 206	BPY 47 P	Q60215-Y66	186
BP 103-3	Q62702-P79-S2	204	BPY 48 P	Q60215-Y65	186
BP 103-4	Q62702-P79-S4	204	BPY 62	Q60215-Y62	204
BP 103-5	Q62702-P781	204	BPY 62-2	Q60215-Y1111	204
BP 103-6	Q62702-P768	204	BPY 62-3	Q60215-Y1112	204
BP 104 BS	Q62702-P917	189	BPY 62-4	Q60215-Y1113	204
BP 104	Q62702-P84	189	BPY 62-5	Q62702-P1113	204
BPW 21	Q62702-P885	189	BPY 63 P	Q60215-Y63-S1	186
BPW 32	Q62702-P74	189	BPY 64 P	Q60215-Y67	186
BPW 33	Q62702-P76	189	BRT 11H	C67079-A1000-A6	87
BPW 34 B	Q62702-P945	189	BRT 11H Opt. 1	C67079-A1040-A5	87
BPW 34 F	Q62702-P929	189	BRT 11H Opt. 1+6	C67079-A1040-A14	87
BPW 34 FA	Q62702-P1129	189	BRT 11H Opt. 1+7	C67079-A1040-A17	87
BPW 34	Q62702-P73	189	BRT 11H Opt. 6	C67079-A1040-A8	87
BPX 38	Q62702-P15	204	BRT 11H Opt. 7	C67079-A1040-A11	87
BPX 38-2	Q62702-P15-S2	204	BRT 12H	C67079-A1001-A6	87
BPX 38-3	Q62702-P15-S3	204	BRT 12H Opt. 1	C67079-A1041-A5	87
BPX 38-4	Q62702-P15-S4	204	BRT 12H Opt. 1+6	C67079-A1041-A14	87
BPX 38-5	Q62702-P15-S5	204	BRT 12H Opt. 1+7	C67079-A1041-A17	87
BPX 43	Q62702-P16	204	BRT 12H Opt. 6	C67079-A1041-A8	87
BPX 43-2	Q62702-P16-S2	204	BRT 12H Opt. 7	C67079-A1041-A11	87
BPX 43-3	Q62702-P16-S3	204	BRT 13H	C67079-A1002-A6	87
BPX 43-4	Q62702-P16-S4	204	BRT 13H Opt. 1	C67079-A1042-A5	87
BPX 43-5	Q62702-P16-S5	204	BRT 13H Opt. 1+6	C67079-A1042-A14	87
BPX 48	Q62702-P17-S1	189	BRT 13H Opt. 1+7	C67079-A1042-A17	87
BPX 60	Q62702-P54	189	BRT 13H Opt. 6	C67079-A1042-A8	87
BPX 61	Q62705-P25	189	BRT 13H Opt. 7	C67079-A1042-A11	87

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BTS 100	C67078-A5007-A2	88	BUZ 12	C67078-S1331-A2	79
BTS 110	C67078-A5008-A2	88	BUZ 12A	C67078-S1331-A3	79
BTS 112A	C67078-S5014-A3	88	BUZ 12AL	C67078-S1332-A3	79
BTS 113A	C67078-S5015-A3	88	BUZ 15	C67078-S1001-A2	79
BTS 114	C67078-A5000-A3	88	BUZ 16	C67078-S1020-A2	79
BTS 114A	C67078-S5000-A2	88	BUZ 171	C67078-A1450-A2	82
BTS 115	C67078-A5004-A4	88	BUZ 172	C67078-A1451-A2	82
BTS 115A	C67078-S5004-A2	88	BUZ 173	C67078-A1452-A2	82
BTS 120	C67078-A5009-A2	88	BUZ 20	C67078-S1302-A2	79
BTS 121A	C67078-S5010-A2	88	BUZ 205	C67078-A1401-A2	80
BTS 129	C67078-A5013-A2	88	BUZ 21	C67078-S1308-A2	79
BTS 130	C67078-A5001-A3	88	BUZ 210	C67078-A1102-A3	81
BTS 131	C67078-A5002-A4	88	BUZ 215	C67078-A1400-A2	81
BTS 132	C67078-A5003-A4	88	BUZ 22	C67078-S1333-A2	79
BTS 140A	C67078-S5011-A2	88	BUZ 24	C67078-S1003-A2	79
BTS 240A	C67078-S5100-A3	88	BUZ 255	C67078-S1406-A2	80
BTS 302	C67078-A5200-A3	90	BUZ 271	C67078-S1453-A2	82
BTS 410D	C67078-S5305-A3	90	BUZ 272	C67078-S1454-A2	82
BTS 410E	C67078-S5305-A4	90	BUZ 305	C67078-S3134-A2	82
BTS 410F	C67078-S5305-A5	90	BUZ 307	C67078-A3100-A2	82
BTS 410G	C67078-S5305-A6	90	BUZ 308	C67078-A3109-A2	82
BTS 410H	C67078-S5305-A17	90	BUZ 30A	C67078-S1303-A3	80
BTS 412A	C67078-A5300-A5	90	BUZ 31	C67078-S1304-A2	80
BTS 412B	C67078-S5300-A9	90	BUZ 310	C67078-A3101-A2	82
BTS 413A	C67078-A5307-A2	90	BUZ 311	C67078-A3102-A2	82
BTS 426	C67078-S5318-A2	90	BUZ 312	C67078-S3129-A2	82
BTS 432D	C67078-S5303-A3	90	BUZ 32	C67078-S1310-A2	80
BTS 432E	C67078-S5303-A4	90	BUZ 323	C67078-S3127-A2	80
BTS 432F	C67078-S5303-A5	90	BUZ 325	C67078-S3118-A2	80
BTS 432I1	C67078-S5308-A2	90	BUZ 326	C67078-S3112-A2	80
BTS 542D	C67078-S5400-A3	90	BUZ 330	C67078-S3105-A2	81
BTS 542E	C67078-S5400-A4	90	BUZ 331	C67078-S3114-A2	81
BTS 611	C67078-S5504-A2	90	BUZ 332	C67078-S3123-A2	81
BTS 612	C67078-S5505-A2	90	BUZ 332A	C67078-S3123-A4	81
BTS 621	C67078-S5506-A2	90	BUZ 334	C67078-S3130-A2	81
BTS 629	C67078-S5501-A2	93	BUZ 338	C67078-S3126-A2	81
BTS 629A	C67078-S5501-A5	93	BUZ 341	C67078-S3128-A2	80
BUP 200	C67078-A4400-A2	83	BUZ 344	C67078-S3132-A2	79
BUP 202	C67078-A4401-A2	83	BUZ 345	C67078-S3121-A2	79
BUP 203	C67078-A4402-A2	83	BUZ 346	C67078-S3120-A2	79
BUP 300	C67078-A4203-A2	83	BUZ 347	C67078-S3115-A2	79
BUP 302	C67078-A4205-A2	83	BUZ 349	C67078-S3113-A2	79
BUP 303	C67078-A4202-A2	83	BUZ 350	C67078-S3117-A2	80
BUP 304	C67078-A4200-A2	83	BUZ 355	C67078-A3107-A2	82
BUP 307	C67078-A4201-A2	83	BUZ 356	C67078-A3108-A2	82
BUZ 10	C67078-S1300-A2	79	BUZ 357	C67078-S3110-A2	82
BUZ 10L	C67078-S1329-A2	79	BUZ 358	C67078-S3111-A2	82
BUZ 10S2	C67078-S1300-A7	79	BUZ 36	C67078-S1018-A2	80
BUZ 11	C67078-S1301-A2	79	BUZ 382	C67078-A3207-A2	80
BUZ 11A	C67078-S1301-A3	79	BUZ 384	C67078-A3209-A2	81
BUZ 11AL	C67078-S1330-A3	79	BUZ 385	C67078-A3210-A2	81

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BUZ 41A	C67078-A1306-A3	81	BYP 102	C67047-A2071-A2	83
BUZ 42	C67078-A1311-A2	81	BYP 103	C67047-A2066-A2	83
BUZ 45	C67078-A1008-A8	81	BYP 301	C67047-A2251-A2	83
BUZ 45A	C67078-A1008-A9	81	BYP 302	C67047-A2252-A2	83
BUZ 45B	C67078-A1008-A10	81	BYP 303	C67047-A2253-A2	83
BUZ 50A	C67078-A1307-A3	82	CF 739	Q62702-F1215	75
BUZ 50B	C67078-A1307-A4	82	CF 750	Q62702-F1391	75
BUZ 50C	C67078-A1307-A5	82	CFY 25-17	Q62703-F106	74
BUZ 51	C67078-S1344-A2	82	CFY 25-20	Q62703-F107	74
BUZ 53A	C67078-A1009-A3	82	CFY 25-23	Q62703-F108	74
BUZ 54	C67078-S1010-A2	82	CFY 30	Q62703-F97	74
BUZ 54A	C67078-S1010-A3	82	CFY 35-20	Q62702-F1393	74
BUZ 60	C67078-S1312-A2	80	CFY 65-12	Q62703-F101	74
BUZ 61	C67078-S1341-A2	80	CFY 66-08	Q62702-F1456	74
BUZ 61A	C67078-S1341-A3	80	CFY 76-10	Q62702-F1514	74
BUZ 64	C67078-S1017-A2	80	CGY 21	Q68000-A5953	75
BUZ 70	C67078-S1334-A2	79	CGY 40	Q68000-A4444	75
BUZ 70L	C67078-S1325-A2	79	CGY 50	Q68000-A8370	75
BUZ 71	C67078-S1316-A2	79	CLY 10	Q62702-L91	74
BUZ 71A	C67078-S1316-A3	79	CLY 5	Q62702-L92	74
BUZ 71AL	C67078-S1326-A2	79	CNY 17 F-1 Opt. 1	Q62703-N49-X1	229
BUZ 71L	C67078-S1326-A5	79	CNY 17 F-1 Opt. 1+6	Q62703-N49-X16	229
BUZ 71S2	C67078-S1316-A9	79	CNY 17 F-1 Opt. 1+7	Q62703-N49-X17	231
BUZ 72	C67078-S1313-A2	79	CNY 17 F-2 Opt. 1	Q62703-N21-X1	229
BUZ 72A	C67078-S1313-A3	79	CNY 17 F-2 Opt. 1+6	Q62703-N21-X16	229
BUZ 72AL	C67078-S1327-A3	79	CNY 17 F-2 Opt. 1+7	Q62703-N21-X17	231
BUZ 72L	C67078-S1327-A2	79	CNY 17 F-3 Opt. 1	Q62703-N50-X1	229
BUZ 73	C67078-S1317-A2	80	CNY 17 F-3 Opt. 1+6	Q62703-N50-X16	229
BUZ 73A	C67078-S1317-A3	80	CNY 17 F-3 Opt. 1+7	Q62703-N50-X17	231
BUZ 73AL	C67078-S1328-A3	80	CNY 17 F-4 Opt. 1	Q62703-N54-X1	229
BUZ 73L	C67078-S1328-A2	80	CNY 17 F-4 Opt. 1+6	Q62703-N54-X16	229, 230
BUZ 74	C67078-S1314-A2	81	CNY 17-1 Opt. 1	Q62703-N86-X1	229
BUZ 74A	C67078-S1314-A3	81	CNY 17-1 Opt. 1+6	Q62703-N86-X16	229
BUZ 76	C67078-S1315-A2	80	CNY 17-1 Opt. 1+7	Q62703-N86-X17	229
BUZ 76A	C67078-S1315-A3	80	CNY 17-1 Opt. 6	Q62703-N86-X6	223
BUZ 77A	C67078-S1320-A3	81	CNY 17-1 Opt. 7	Q62703-N86-X7	223
BUZ 77B	C67078-S1320-A5	81	CNY 17-1	Q62703-N86	223
BUZ 78	C67078-S1318-A2	82	CNY 17-2 Opt. 1	Q62703-N87-X1	229
BUZ 80	C67078-A1309-A2	82	CNY 17-2 Opt. 1+6	Q62703-N87-X16	229
BUZ 80A	C67078-A1309-A3	82	CNY 17-2 Opt. 1+7	Q62703-N87-X17	229
BUZ 81	C67078-S1345-A2	82	CNY 17-2 Opt. 6	Q62703-N87-X6	223
BUZ 84	C67078-A1013-A2	82	CNY 17-2 Opt. 7	Q62703-N87-X7	223
BUZ 84A	C67078-A1013-A3	82	CNY 17-2	Q62703-N87	223
BUZ 90	C67078-S1321-A2	81	CNY 17-3 Opt. 1	Q62703-N88-X1	229
BUZ 90A	C67078-S1321-A3	81	CNY 17-3 Opt. 1+6	Q62703-N88-X16	229
BUZ 91	C67078-S1342-A2	81	CNY 17-3 Opt. 1+7	Q62703-N88-X17	229
BUZ 91A	C67078-S1342-A2	81	CNY 17-3 Opt. 6	Q62703-N88-X6	223
BUZ 92	C67078-S1343-A2	81	CNY 17-3 Opt. 7	Q62703-N88-X7	223
BUZ 93	C67078-S1346-A2	81	CNY 17-3	Q62703-N88	223
BUZ 94	C67078-A1019-A2	81	CNY 17-4 Opt. 1	Q62703-N89-X1	229
BYP 100	C67047-A2254-A2	83	CNY 17-4 Opt. 1+6	Q62703-N89-X16	229

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LG 3369-FH	Q62703-Q1713	115	LG K382-S	Q62703-Q2644	103
LG 3380-GK	Q62703-Q1356	101	LG K382-T	Q62703-Q2645	103
LG 3380-H	Q62703-Q1358	101	LG K389-FO	Q62703-Q1773	103
LG 3380-HL	Q62703-Q1359	101	LG K389-MO	Q62703-Q2463	103
LG 3380-J	Q62703-Q2318	101	LG S260-DO	Q62703-Q1608	118
LG 3380-K	Q62703-Q2631	101	LG S269-BO	Q62703-Q1570	118
LG 5360-GK	Q62703-Q1391	106	LG T670-HK	Q62703-Q2312	118
LG 5360-H	Q62703-Q1390	106	LG T670-J	Q62703-Q2377	118
LG 5360-J	Q62703-Q1866	106	LG T670-JL	Q62703-Q2505	118
LG 5360-JM	Q62703-Q2013	106	LG T670-K	Q62703-Q2378	118
LG 5360-K	Q62703-Q2012	106	LG T672-LN	Q62703-Q2625	119
LG 5380-FJ	Q62703-Q1463	106	LG T672-MQ	Q62703-Q2333	119
LG 5380-H	Q62703-Q2032	106	LG T672-N	Q62703-Q2517	119
LG 5380-HL	Q62703-Q2017	106	LG T672-P	Q62703-Q2518	119
LG 5380-J	Q62703-Q2016	106	LG T679-CO	Q62703-Q2385	119
LG 5410-MQ	Q62703-Q1439	105	LG U260-EO	Q62703-Q1494	115
LG 5410-P	Q62703-Q1868	105	LG Z180-CO	Q62703-Q1505	121
LG 5410-PS	Q62703-Q2022	105	LG Z181-CO	Q62703-Q1506	121
LG 5410-Q	Q62703-Q2020	105	LG Z182-CO	Q62703-Q1507	121
LG 5410-R	Q62703-Q2021	105	LG Z183-CO	Q62703-Q1508	121
LG 5411-NR	Q62703-Q2023	107	LG Z184-CO	Q62703-Q1509	121
LG 5411-Q	Q62703-Q1739	107	LG Z185-CO	Q62703-Q1510	121
LG 5411-QT	Q62703-Q2024	107	LG Z186-CO	Q62703-Q1511	121
LG 5411-R	Q62703-Q1451	107	LG Z188-CO	Q62703-Q1513	121
LG 5411-S	Q62703-Q2321	107	LH 1056	Q68000-A8675	250
LG 5460-GK	Q62703-Q1407	107	LH 3344-QO	Q62703-Q2231	110
LG 5460-H	Q62703-Q1409	107	LH 3364-MOS	Q62703-Q2233	110
LG 5460-J	Q62703-Q1867	107	LH 5424-QO	Q62703-Q2242	110
LG 5460-JM	Q62703-Q2015	107	LH 5464-LO	Q62703-Q2244	110
LG 5460-K	Q62703-Q2014	107	LH T674-KM	Q62703-Q2329	119
LG 5469-EH	Q62703-Q1753	115	LH T674-L	Q62703-Q2282	119
LG 5469-FH	Q62703-Q1716	115	LH T674-LN	Q62703-Q2617	119
LG 5480-J	Q62703-Q1869	111	LH T674-M	Q62703-Q2288	119
LG 5480-GK	Q62703-Q1423	111	LO 3340-KN	Q62703-Q1886	99
LG 5480-H	Q62703-Q1422	111	LO 3340-M	Q62703-Q2255	99
LG 5480-K	Q62703-Q2018	111	LO 3340-MP	Q62703-Q2628	99
LG 5480-JM	Q62703-Q2019	112	LO 3340-N	Q62703-Q2473	99
LG B480-EH	Q62703-Q1477	112	LO 3360-HL	Q62703-Q1887	100
LG B480-G	Q62703-Q1870	112	LO 3360-JM	Q62703-Q2410	100
LG B480-GK	Q62703-Q2026	112	LO 3360-J	Q62703-Q2399	100
LG B480-H	Q62703-Q2025	112	LO 3360-K	Q62703-Q2400	100
LG K380-EH	Q62703-Q1491	112	LO K380-LP	Q62703-Q1888	102
LG K380-G	Q62703-Q1871	112	LO K380-N	Q62703-Q2227	102
LG K380-GK	Q62703-Q2027	112	LO K380-NR	Q62703-Q2201	102
LG K380-H	Q62703-Q1872	112	LO K380-P	Q62703-Q2228	102
LG K380-LP	Q62703-Q1770	102	LO K382-QT	Q62703-Q2636	102
LG K380-N	Q62703-Q0759	102	LO K382-R	Q62703-Q2637	102
LG K380-NR	Q62703-Q2225	102	LO K382-RU	Q62703-Q1957	102
LG K380-P	Q62703-Q1034	102	LO K382-S	Q62703-Q2638	102
LG K382-QT	Q62703-Q2642	103	LO K380-MO	Q62703-Q2465	103
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LO T670-JL	Q62703-Q2503	118	LR Z185-CO	Q62703-Q1499	121
LO T670-K	Q62703-Q2476	116	LR Z186-CO	Q62703-Q1500	121
LO T672-LN	Q62703-Q2623	119	LR Z187-CO	Q62703-Q1501	121
LO T672-MQ	Q62703-Q2330	119	LR Z188-CO	Q62703-Q1502	121
LO T672-N	Q62703-Q2494	119	LR Z189-CO	Q62703-Q1503	121
LO T672-P	Q62703-Q2493	119	LS 3340-KN	Q62703-Q1701	99
LO 380-KO	Q62703-Q2506	102	LS 3340-M	Q62703-Q1704	99
LOP 370-KN	Q62703-Q2529	104	LS 3340-MP	Q62703-Q1703	99
LP K382- NR	Q62703-Q2646	103	LS 3340-NS	Q62703-Q2330	99
LP K382-P	Q62703-Q2339	103	LS 3341-KN	Q62703-Q2145	99
LP K382-PS	Q62703-Q2123	103	LS 3341-M	Q62703-Q2146	99
LP K382-Q	Q62703-Q2338	103	LS 3341-MQ	Q62703-Q2148	99
LP K382-R	Q62703-Q2337	103	LS 3341-N	Q62703-Q2147	99
LP P380-LO	Q62703-Q2464	103	LS 3360-HL	Q62703-Q1320	100
LP T670-FJ	Q62703-Q2619	118	LS 3360-J	Q62703-Q1736	100
LP T670-G	Q62703-Q2620	118	LS 3360-K	Q62703-Q1321	100
LP T670-GK	Q62703-Q2456	118	LS 3360-KN	Q62703-Q1323	100
LP T670-H	Q62703-Q2555	118	LS 3369-EH	Q62703-Q1748	111
LP T672-KM	Q62703-Q2626	119	LS 3369-FH	Q62703-Q1711	115
LP T672-L	Q62703-Q2627	119	LS 3380-FJ	Q62703-Q2629	101
LP T672-LP	Q62703-Q2334	119	LS 3380-HL	Q62703-Q2630	101
LP T672-M	Q62703-Q2289	119	LS 3380-J	Q62703-Q1349	101
LPT 80 A	Q68000-A785	209	LS 3380-H	Q62703-Q1726	101
LPT 85 A	Q68000-A8324	209	LS 5360-HL	Q62703-Q1380	107
LR 3360-DG	Q62703-Q1316	100	LS 5360-J	Q62703-Q1744	107
LR 3360-F	Q62703-Q1317	100	LS 5360-K	Q62703-Q1381	107
LR 3360-FJ	Q62703-Q1319	100	LS 5360-KN	Q62703-Q1383	107
LR 3360-G	Q62703-Q1318	100	LS 5360-L	Q62703-Q1382	107
LR 3360-GK	Q62703-Q2467	100	LS 5380-FJ	Q62703-Q1452	107
LR 5360-DG	Q62703-Q1376	107	LS 5380-H	Q62703-Q1453	107
LR 5360-F	Q62703-Q1377	107	LS 5380-HL	Q62703-Q1455	107
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Bestellnummer Ordering Code	Typ Type	Seite Page	Bestellnummer Ordering Code	Typ Type	Seite Page
C67047-A2066-A2	BYP 103	83	C67078-A1102-A3	BUZ 210	81
C67047-A2071-A2	BYP 102	83	C67078-A1306-A3	BUZ 41A	81
C67047-A2072-A2	BYP 101	83	C67078-A1307-A3	BUZ 50A	82
C67047-A2251-A2	BYP 301	83	C67078-A1307-A4	BUZ 50B	82
C67047-A2252-A2	BYP 302	83	C67078-A1307-A5	BUZ 50C	82
C67047-A2253-A2	BYP 303	83	C67078-A1309-A2	BUZ 80	82
C67047-A2254-A2	BYP 100	83	C67078-A1309-A3	BUZ 80A	82
C67076-A1001-A2	BSM 181	94	C67078-A1311-A2	BUZ 42	81
C67076-A1004-A2	BSM 151	94	C67078-A1400-A2	BUZ 215	81
C67076-A1009-A2	BSM 191	94	C67078-A1401-A2	BUZ 205	80
C67076-A1010-A2	BSM 141	94	C67078-A1450-A2	BUZ 171	82
C67076-A1016-A2	BSM 181R	94	C67078-A1451-A2	BUZ 172	82
C67076-A1050-A2	BSM 151F	94	C67078-A1452-A2	BUZ 173	82
C67076-A1052-A2	BSM 181F	94	C67078-A3100-A2	BUZ 307	82
C67076-A1053-A2	BSM 191F	94	C67078-A3101-A2	BUZ 310	82
C67076-A1150-A2	BSM 254F	94	C67078-A3102-A2	BUZ 311	82
C67076-A1151-A2	BSM 294F	94	C67078-A3107-A2	BUZ 355	82
C67076-A1152-A2	BSM 284F	94	C67078-A3108-A2	BUZ 356	82
C67076-A1155-A2	BSM 244F	94	C67078-A3109-A2	BUZ 308	82
C67076-A2000-A2	BSM 300GA 100 D	95	C67078-A3207-A2	BUZ 382	80
C67076-A2001-A2	BSM 200GA 100 D	95	C67078-A3209-A2	BUZ 384	81
C67076-A2006-A2	BSM 200GA 120 D	96	C67078-A3210-A2	BUZ 385	81
C67076-A2007-A2	BSM 300GA 120 D	96	C67078-A4200-A2	BUP 304	83
C67076-A2100-A2	BSM 50GB 100 D	95	C67078-A4201-A2	BUP 307	83
C67076-A2101-A2	BSM 25GB 100 D	95	C67078-A4202-A2	BUP 303	83
C67076-A2102-A2	BSM 150GB 100 D	95	C67078-A4203-A2	BUP 300	83
C67076-A2103-A2	BSM 100GB 100 D	95	C67078-A4205-A2	BUP 302	83
C67076-A2104-A2	BSM 75GB 100 D	95	C67078-A4400-A2	BUP 200	83
C67076-A2105-A2	BSM 50GB 120 D	96	C67078-A4401-A2	BUP 202	83
C67076-A2106-A2	BSM 75GB 120 D	96	C67078-A4402-A2	BUP 203	83
C67076-A2107-A2	BSM 100GB 120 D	96	C67078-A5000-A3	BTS 114	88
C67076-A2108-A2	BSM 150GB 120 D	96	C67078-A5001-A3	BTS 130	88
C67076-A2109-A2	BSM 25GB 120 D	96	C67078-A5002-A4	BTS 131	88
C67076-A2500-A2	BSM 15GD 100 D	95	C67078-A5003-A4	BTS 132	88
C67076-A2501-A2	BSM 25GD 100 D	95	C67078-A5004-A4	BTS 115	88
C67076-A2504-A2	BSM 15GD 120 D	96	C67078-A5007-A2	BTS 100	88
C67076-A2505-A2	BSM 25GD 120 D	96	C67078-A5008-A2	BTS 110	88
C67076-A2506-A2	BSM 05GD 100 D N1	95	C67078-A5009-A2	BTS 120	88
C67076-A2507-A2	BSM 10GD 100 D N1	95	C67078-A5013-A2	BTS 129	88
C67076-S1013-A2	BSM 111AR	94	C67078-A5200-A3	BTS 302	90
C67076-S1014-A2	BSM 121AR	94	C67078-A5300-A5	BTS 412A	90
C67076-S1018-A2	BSM 101AR	94	C67078-A5307-A2	BTS 413A	90
C67076-S1100-A2	BSM 214A	94	C67078-S1001-A2	BUZ 15	79
C67076-S1101-A2	BSM 224A	94	C67078-S1003-A2	BUZ 24	79
C67076-S1102-A2	BSM 204A	94	C67078-S1010-A2	BUZ 54	82
C67078-A1008-A10	BUZ 45B	81	C67078-S1010-A3	BUZ 54A	82
C67078-A1008-A8	BUZ 45	81	C67078-S1017-A2	BUZ 64	80
C67078-A1008-A9	BUZ 45A	81	C67078-S1018-A2	BUZ 36	80
C67078-A1009-A3	BUZ 53A	82	C67078-S1020-A2	BUZ 16	79
C67078-A1013-A2	BUZ 84	82	C67078-S1300-A2	BUZ 10	79
C67078-A1013-A3	BUZ 84A	82	C67078-S1300-A7	BUZ 10S2	79
C67078-A1019-A2	BUZ 94	81	C67078-S1301-A2	BUZ 11	79

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C67078-S1301-A3	BUZ 11A	79	C67078-S3111-A2	BUZ 358	82
C67078-S1301-A5	BUZ 11S2	79	C67078-S3112-A2	BUZ 326	80
C67078-S1302-A2	BUZ 20	79	C67078-S3113-A2	BUZ 349	79
C67078-S1303-A3	BUZ 30A	80	C67078-S3114-A2	BUZ 331	81
C67078-S1304-A2	BUZ 31	80	C67078-S3115-A2	BUZ 347	79
C67078-S1305-A4	BUZ 40B	81	C67078-S3117-A2	BUZ 350	80
C67078-S1308-A2	BUZ 21	79	C67078-S3118-A2	BUZ 325	80
C67078-S1310-A2	BUZ 32	80	C67078-S3120-A2	BUZ 346	79
C67078-S1312-A2	BUZ 60	80	C67078-S3121-A2	BUZ 345	79
C67078-S1313-A2	BUZ 72	79	C67078-S3123-A2	BUZ 332	81
C67078-S1313-A3	BUZ 72A	79	C67078-S3123-A4	BUZ 332A	81
C67078-S1314-A2	BUZ 74	81	C67078-S3126-A2	BUZ 338	81
C67078-S1314-A3	BUZ 74A	81	C67078-S3127-A2	BUZ 323	80
C67078-S1315-A2	BUZ 76	80	C67078-S3128-A2	BUZ 341	80
C67078-S1315-A3	BUZ 76A	80	C67078-S3129-A2	BUZ 312	82
C67078-S1316-A2	BUZ 71	79	C67078-S3130-A2	BUZ 334	81
C67078-S1316-A3	BUZ 71A	79	C67078-S3132-A2	BUZ 344	79
C67078-S1316-A9	BUZ 71S2	79	C67078-S3134-A2	BUZ 305	82
C67078-S1317-A2	BUZ 73	80	C67078-S5000-A2	BTS 114A	88
C67078-S1317-A3	BUZ 73A	80	C67078-S5004-A2	BTS 115A	88
C67078-S1318-A2	BUZ 78	82	C67078-S5010-A2	BTS 121A	88
C67078-S1320-A3	BUZ 77A	81	C67078-S5011-A2	BTS 140A	88
C67078-S1320-A5	BUZ 77B	81	C67078-S5014-A3	BTS 112A	88
C67078-S1321-A2	BUZ 90	81	C67078-S5015-A3	BTS 113A	88
C67078-S1321-A3	BUZ 90A	81	C67078-S5100-A3	BTS 240A	88
C67078-S1325-A2	BUZ 70L	79	C67078-S5300-A9	BTS 412B	90
C67078-S1326-A2	BUZ 71AL	79	C67078-S5303-A3	BTS 432D	90
C67078-S1326-A5	BUZ 71L	79	C67078-S5303-A4	BTS 432E	90
C67078-S1327-A2	BUZ 72L	79	C67078-S5303-A5	BTS 432F	90
C67078-S1327-A3	BUZ 72AL	79	C67078-S5305-A17	BTS 410H	90
C67078-S1328-A2	BUZ 73L	80	C67078-S5305-A3	BTS 410D	90
C67078-S1328-A3	BUZ 73AL	80	C67078-S5305-A4	BTS 410E	90
C67078-S1329-A2	BUZ 10L	79	C67078-S5305-A5	BTS 410F	90
C67078-S1330-A3	BUZ 11AL	79	C67078-S5305-A6	BTS 410G	90
C67078-S1331-A2	BUZ 12	79	C67078-S5308-A2	BTS 432I1	90
C67078-S1331-A3	BUZ 12A	79	C67078-S5318-A2	BTS 426	90
C67078-S1332-A3	BUZ 12AL	79	C67078-S5400-A3	BTS 542D	90
C67078-S1333-A2	BUZ 22	79	C67078-S5400-A4	BTS 542E	90
C67078-S1334-A2	BUZ 70	79	C67078-S5501-A2	BTS 629	93
C67078-S1341-A2	BUZ 61	80	C67078-S5501-A5	BTS 629A	93
C67078-S1341-A3	BUZ 61A	80	C67078-S5504-A2	BTS 611	90
C67078-S1342-A2	BUZ 91	81	C67078-S5505-A2	BTS 612	90
C67078-S1342-A2	BUZ 91A	81	C67078-S5506-A2	BTS 621	90
C67078-S1343-A2	BUZ 92	81	C67079-A1000-A6	BRT 11H	87
C67078-S1344-A2	BUZ 51	82	C67079-A1001-A6	BRT 12H	87
C67078-S1345-A2	BUZ 81	82	C67079-A1002-A6	BRT 13H	87
C67078-S1346-A2	BUZ 93	81	C67079-A1020-A6	BRT 21H	87
C67078-S1406-A2	BUZ 255	80	C67079-A1021-A6	BRT 22H	87
C67078-S1453-A2	BUZ 271	82	C67079-A1022-A6	BRT 23H	87
C67078-S1454-A2	BUZ 272	82	C67079-A1040-A11	BRT 11H Opt. 7	87
C67078-S3105-A2	BUZ 330	81	C67079-A1040-A14	BRT 11H Opt. 1+6	87
C67078-S3110-A2	BUZ 357	82	C67079-A1040-A17	BRT 11H Opt. 1+7	87

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C67079-A1040-A5	BRT 11H Opt. 1	87	Q62702-A1043	BAR 64-06	68
C67079-A1040-A8	BRT 11H Opt. 6	87	Q62702-A1044	BAR 64-07	68
C67079-A1041-A11	BRT 12H Opt. 7	87	Q62702-A1050	BAS 16W	51
C67079-A1041-A14	BRT 12H Opt. 1+6	87	Q62702-A1051	BAV 99W	51
C67079-A1041-A17	BRT 12H Opt. 1+7	87	Q62702-A113	BAS 20	51
C67079-A1041-A5	BRT 12H Opt. 1	87	Q62702-A118	BAS 70	52
C67079-A1041-A8	BRT 12H Opt. 6	87	Q62702-A120	BAR 61	68
C67079-A1042-A11	BRT 13H Opt. 7	87	Q62702-A42	BAT 14-099 R	67
C67079-A1042-A14	BRT 13H Opt. 1+6	87	Q62702-A43	BAT 15-099 R	67
C67079-A1042-A17	BRT 13H Opt. 1+7	87	Q62702-A504	BAT 17	67
C67079-A1042-A5	BRT 13H Opt. 1	87	Q62702-A688	BAW 56	51
C67079-A1042-A8	BRT 13H Opt. 6	87	Q62702-A704	BAR 74	51
C67079-A1050-A11	BRT 21H Opt. 7	87	Q62702-A711	BAS 70-05	52
C67079-A1050-A16	BRT 21H Opt. 1+6	87	Q62702-A712	BAW 101	51
C67079-A1050-A17	BRT 21H Opt. 1+7	87	Q62702-A718	BAL 74	51
C67079-A1050-A5	BRT 21H Opt. 1	87	Q62702-A730	BAS 70-04	52
C67079-A1050-A8	BRT 21H Opt. 6	87	Q62702-A731	BAR 15-1	68
C67079-A1051-A11	BRT 22H Opt. 7	87	Q62702-A739	BAS 16	51
C67079-A1051-A16	BRT 22H Opt. 1+6	87	Q62702-A77	BAS 28	51
C67079-A1051-A17	BRT 22H Opt. 1+7	87	Q62702-A772	BAR 14-1	68
C67079-A1051-A5	BRT 22H Opt. 1	87	Q62702-A773	BAR 16-1	68
C67079-A1051-A8	BRT 22H Opt. 6	87	Q62702-A774	BAS 70-06	52
C67079-A1052-A11	BRT 23H Opt. 7	87	Q62702-A775	BAT 17-04	67
C67079-A1052-A14	BRT 23H Opt. 1+6	87	Q62702-A776	BAT 17-05	67
C67079-A1052-A17	BRT 23H Opt. 1+7	87	Q62702-A777	BAT 17-06	67
C67079-A1052-A5	BRT 23H Opt. 1	87	Q62702-A785	BAR 17	68
C67079-A1052-A8	BRT 23H Opt. 6	87	Q62702-A786	BAR 60	68
Q60206-X60	BFX 60	69	Q62702-A79	BAS 21	51
Q60215-Y111-S4	BPY 11 P IV	186	Q62702-A846	BAS 70-07	52
Q60215-Y111-S5	BPY 11 P V	186	Q62702-A879	BAT 64	52
Q60215-Y1111	BPY 62-2	204	Q62702-A926	BAT 68	67
Q60215-Y1112	BPY 62-3	204	Q62702-A95	BAS 19	51
Q60215-Y1113	BPY 62-4	204	Q62702-A961	BAT 64-04	52
Q60215-Y62	BPY 62	204	Q62702-A962	BAT 64-05	52
Q60215-Y63-S1	BPY 63 P	186	Q62702-A963	BAT 64-06	52
Q60215-Y65	BPY 48 P	186	Q62702-A964	BAT 64-07	52
Q60215-Y66	BPY 47 P	186	Q62702-A971	BAT 62	67
Q60215-Y67	BPY 64 P	186	Q62702-B631	BBY 51	68
Q62607-S60	TP 60 P	186	Q62702-C1322	BCW 68G	58
Q62607-S61	TP 61 P	186	Q62702-C1474	BCV 27	62
Q62700-S505	BSS 125	85	Q62702-C1475	BCV 46	62
Q62702-A0004	BAT 68-04	67	Q62702-C1476	BCW 60C	55
Q62702-A0015	BAT 68-05	67	Q62702-C1477	BCW 60D	55
Q62702-A0019	BAT 68-06	67	Q62702-C1478	BCW 61C	57
Q62702-A0044	BAT 68-07	67	Q62702-C1479	BCW 65C	55
Q62702-A0913	BAS 78 D	52	Q62702-C1480	BCW 67B	58
Q62702-A0917	BAS 79 D	52	Q62702-C1481	BCX 70H	55
Q62702-A1010	BAR 64-04	68	Q62702-C1485	BCX 42	58
Q62702-A1030	BAV 70W	51	Q62702-C1493	BCV 26	62
Q62702-A1031	BAW 56W	51	Q62702-C1497	BCW 60B	55
Q62702-A1041	BAR 64	68	Q62702-C1501	BCV 47	62
Q62702-A1042	BAR 64-05	68	Q62702-C1502	BCX 53-16	59

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Q62702-C1504	BC 808-25	57	Q62702-C1903	BCX 55-16	57
Q62702-C1505	BC 818-40	55	Q62702-C206	BC 257 B	54
Q62702-C1506	BC 848 C	55	Q62702-C2106	BCP 56-16	60
Q62702-C1507	BC 858 C	57	Q62702-C2107	BCP 51	60
Q62702-C1526	BCW 66G	55	Q62702-C2109	BCP 51-10	60
Q62702-C1552	BCX 70J	55	Q62702-C2110	BCP 51-16	60
Q62702-C1554	BCX 71J	58	Q62702-C2112	BCP 52-10	60
Q62702-C1555	BCW 68H	58	Q62702-C2113	BCP 52-16	60
Q62702-C1556	BCW 61D	57	Q62702-C2115	BCP 53-10	60
Q62702-C1571	BCX 70K	55	Q62702-C2116	BCP 53-16	60
Q62702-C1572	BCX 68	57	Q62702-C2117	BCP 54	60
Q62702-C1585	BCW 61B	57	Q62702-C2119	BCP 54-10	60
Q62702-C1586	BCX 71H	58	Q62702-C2120	BCP 54-16	60
Q62702-C1612	BCW 65B	55	Q62702-C2122	BCP 55-10	60
Q62702-C1613	BCX 56-16	57	Q62702-C2123	BCP 55-16	60
Q62702-C1614	BCX 56	57	Q62702-C2125	BCP 56-10	60
Q62702-C1632	BCW 66H	55	Q62702-C2126	BCP 68	60
Q62702-C1635	BCX 56-10	57	Q62702-C2130	BCP 69	60
Q62702-C1654	BCX 71K	58	Q62702-C2134	BCP 28	64
Q62702-C1659	BCX 41	55	Q62702-C2135	BCP 48	64
Q62702-C1681	BCW 67C	58	Q62702-C2136	BCP 29	64
Q62702-C1687	BC 847 B	55	Q62702-C2137	BCP 49	64
Q62702-C1688	BC 857 B	57	Q62702-C2146	BCP 52	60
Q62702-C1689	BC 807-25	57	Q62702-C2147	BCP 53	60
Q62702-C1690	BC 817-25	55	Q62702-C2148	BCP 55	60
Q62702-C1692	BC 808-40	57	Q62702-C2149	BCP 56	60
Q62702-C1698	BC 858 B	57	Q62702-C2253	BCR 108	56
Q62702-C1704	BC 848 B	55	Q62702-C2254	BCR 112	56
Q62702-C1714	BCX 69	59	Q62702-C2255	BCR 119	56
Q62702-C1715	BC 847 C	55	Q62702-C2256	BCR 133	56
Q62702-C1721	BC 807-40	57	Q62702-C2257	BCR 135	56
Q62702-C1729	BCX 55	57	Q62702-C2258	BCR 141	56
Q62702-C1730	BCX 55-10	57	Q62702-C2259	BCR 142	56
Q62702-C1731	BCX 54-16	57	Q62702-C2260	BCR 146	56
Q62702-C1732	BC 817-16	55	Q62702-C2261	BCR 148	56
Q62702-C1735	BC 807-16	57	Q62702-C2262	BCR 183	58
Q62702-C1738	BC 817-40	55	Q62702-C2263	BCR 185	58
Q62702-C1740	BC 818-25	55	Q62702-C2264	BCR 191	58
Q62702-C1743	BCX 52	59	Q62702-C2265	BCR 192	58
Q62702-C1744	BCX 52-10	59	Q62702-C2266	BCR 198	58
Q62702-C1746	BC 846 B	55	Q62702-C2278	BC 817-25W	55
Q62702-C1753	BCX 53-10	59	Q62702-C2294	BC 857BW	58
Q62702-C1831	BCX 51-10	59	Q62702-C2305	BC 847BW	55
Q62702-C1832	BCV 49	63	Q62702-C2326	BC 807-25W	58
Q62702-C184	BC 257 A	54	Q62702-C276	BC 237 A	53
Q62702-C1847	BCX 51	59	Q62702-C277	BC 237 B	53
Q62702-C1851	BC 857 C	57	Q62702-C279	BC 238 B	53
Q62702-C1854	BCV 48	63	Q62702-C280	BC 238 C	53
Q62702-C1857	BCX 51-16	59	Q62702-C282	BC 239 C	53
Q62702-C1861	BCX 54-10	57	Q62702-C283	BC 307 A	54
Q62702-C1886	BC 856 B	57	Q62702-C286	BC 308 B	54
Q62702-C1900	BCX 52-16	59	Q62702-C311-V2	BC 327-40	54

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Q62702-C311-V3	BC 327-16	54	Q62702-F1144	BFP 93A	72
Q62702-C311-V4	BC 327-25	54	Q62702-F1189	BFQ 82	69
Q62702-C312-V2	BC 328-40	54	Q62702-F1215	CF 739	75
Q62702-C312-V4	BC 328-25	54	Q62702-F1218	BFR 193	70
Q62702-C313-V1	BC 337-25	53	Q62702-F1238	BF 720	66
Q62702-C313-V2	BC 337-40	53	Q62702-F1239	BF 721	66
Q62702-C313-V3	BC 337-16	53	Q62702-F1246	BFN 36	66
Q62702-C314-V2	BC 338-25	53	Q62702-F1282	BFP 193	72
Q62702-C314-V3	BC 338-40	53	Q62702-F1283	BFQ 645	69
Q62702-C324	BC 307 B	54	Q62702-F1291	BFG 193	73
Q62702-C393	BC 308 C	54	Q62702-F1292	BFG 196	73
Q62702-C687-V2	BC 546 B	53	Q62702-F1295	BFQ 181	69
Q62702-C688-V2	BC 547 B	53	Q62702-F1296	BFR 180	70
Q62702-C689-V2	BC 548 B	53	Q62702-F1297	BFP 180	72
Q62702-C689-V3	BC 548 C	53	Q62702-F1298	BFR 280	70
Q62702-C690-V2	BC 549 C	53	Q62702-F1300	BFP 280	72
Q62702-C691-V2	BC 550 C	53	Q62702-F1303	BFN 38	66
Q62702-C692-V2	BC 556 B	54	Q62702-F1304	BFN 37	66
Q62702-C693-V2	BC 557 B	54	Q62702-F1305	BFN 39	66
Q62702-C694-V2	BC 558 B	54	Q62702-F1306	BF 722	66
Q62702-C694-V3	BC 558 C	54	Q62702-F1309	BF 723	66
Q62702-C695-V3	BC 559 C	54	Q62702-F1312	BFQ 193	69
Q62702-C696-V2	BC 560 B	54	Q62702-F1314	BFR 181	70
Q62702-C696-V3	BC 560 C	54	Q62702-F1315	BFR 182	70
Q62702-C74	BC 167 A	53	Q62702-F1316	BFR 183	70
Q62702-C747	BC 368	53	Q62702-F1317	BFP 181	72
Q62702-C748	BC 369	54	Q62702-F1318	BFP 182	72
Q62702-C75	BC 167 B	53	Q62702-F1319	BFP 183	72
Q62702-C825	BC 517	61	Q62702-F1320	BFP 196	72
Q62702-C853	BC 875	61	Q62702-F1321	BFG 194	73
Q62702-C854	BC 877	61	Q62702-F1322	BFG 135A	73
Q62702-C855	BC 879	61	Q62702-F1346	BFR 194	70
Q62702-C905	BCX 53	59	Q62702-F1347	BFP 194	73
Q62702-C941	BC 880	61	Q62702-F1359	BFG 19S	73
Q62702-C942	BC 878	61	Q62702-F1391	CF 750	75
Q62702-C943	BC 876	61	Q62702-F1393	CFY 35-20	74
Q62702-C944	BC 516	61	Q62702-F1432	BFG 235	73
Q62702-C954	BCX 54	57	Q62702-F1456	CFY 66-08	74
Q62702-D1314	BAS 40-07	52	Q62702-F1488	BFR 92W	70
Q62702-D339	BAS 40	52	Q62702-F1489	BFR 93W	70
Q62702-D978	BAS 40-06	52	Q62702-F1490	BFR 180W	70
Q62702-D979	BAS 40-05	52	Q62702-F1491	BFR 181W	70
Q62702-D980	BAS 40-04	52	Q62702-F1492	BFR 182W	70
Q62702-F1049	BFQ 81	70	Q62702-F1493	BFR 183W	70
Q62702-F1050	BFR 92P	70	Q62702-F1494	BFR 280W	70
Q62702-F1051	BFR 93P	70	Q62702-F1495	BFS 17W	70
Q62702-F1062	BFT 92	70	Q62702-F1510	BFR 193W	70
Q62702-F1063	BFT 93	70	Q62702-F1514	CFY 76-10	74
Q62702-F1086	BFR 93A	70	Q62702-F297	BFY 90	69
Q62702-F1088	BFQ 19S	69	Q62702-F321	BFW 92	71
Q62702-F1104	BFQ 73S	69	Q62702-F346-S1	BFR 34A	71
Q62702-F1122	BFP 81	72	Q62702-F369-E4	BFX 59F	69

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Q62702-F370-E2	BFX 59R	69
Q62702-F422-E5	BFX 59	69
Q62702-F451	BFT 65	71
Q62702-F454	BFS 55A	69
Q62702-F456	BFT 66	69
Q62702-F460	BFR 15A	69
Q62702-F514	BFT 97	71
Q62702-F516	BFR 96	71
Q62702-F523	BFT 98	73
Q62702-F524	BFT 99	73
Q62702-F559	BFR 91	71
Q62702-F560	BFR 90	71
Q62702-F595	SFH 100	196
Q62702-F621	BFP 22	65
Q62702-F622	BFP 23	65
Q62702-F659	BFQ 29P	70
Q62702-F735	BFR 91A	71
Q62702-F774	BFQ 70	69
Q62702-F775	BFQ 71	69
Q62702-F776	BFQ 72	69
Q62702-F778	BFQ 74	69
Q62702-F780	BFQ 69	71
Q62702-F877	BFT 98T	71
Q62702-F884	BFN 17	65
Q62702-F885	BFN 16	65
Q62702-F938	BFR 35AP	70
Q62702-F940	BFS 17P	70
Q62702-F976	BFN 26	65
Q62702-F977	BFN 27	65
Q62702-F983	BFQ 17P	69
Q62702-K15	KOM 2084	216
Q62702-K16	KOM 2085	216
Q62702-K2	KOM 2033-A	216
Q62702-K26	KOM 2033-B	216
Q62702-K3	KOM 2045	216
Q62702-K34	KOM 2100-BF	216
Q62702-K35	KOM 2100-B	216
Q62702-K36	KOM 2100-AF	216
Q62702-K37	KOM 2100-A	216
Q62702-K38	KOM 2033-BF	216
Q62702-K39	KOM 2033-AF	216
Q62702-K4	KOM 2059	216
Q62702-K8	KOM 2057-L	216
Q62702-L91	CLY 10	74
Q62702-L92	CLY 5	74
Q62702-P1000	SFH 309-6	208
Q62702-P1001	SFH 409-1	174
Q62702-P1002	SFH 409-2	174
Q62702-P1003	SFH 409-3	174
Q62702-P1012	SFH 250	254
Q62702-P102	SFH 205	196
Q62702-P1029	BPY 12 H1	189
Q62702-P1031	SFH 750	254
Q62702-P1032	SFH 751	254
Q62702-P1033	SFH 350	258
Q62702-P1034	SFH 450	254
Q62702-P1038	SFH 291	194
Q62702-P1051	SFH 225	196
Q62702-P1052	SFH 231	196
Q62702-P1053	SFH 232	196
Q62702-P1054	SFH 233	196
Q62702-P1081	SFH 263	194
Q62702-P1082	SFH 2031	253
Q62702-P1087	SFH 900-4	220
Q62702-P1088	SFH 900-3	220
Q62702-P1113	BPY 62-5	204
Q62702-P1115	SFH 2012 A	253
Q62702-P1116	SFH 462-L E7800	178
Q62702-P1117	SFH 905-1	220
Q62702-P1118	SFH 905-2	220
Q62702-P1129	BPW 34 FA	189
Q62702-P1132	SFH 420-N	174
Q62702-P1135	SFH 415-S	174
Q62702-P1136	SFH 415-T	174
Q62702-P1137	SFH 415-U	174
Q62702-P1138	SFH 416-Q	174
Q62702-P1139	SFH 416-R	174
Q62702-P1154	SFH 414-T	174
Q62702-P1155	SFH 414-U	174
Q62702-P1161	SFH 551	258
Q62702-P1163	BSP 50	64
Q62702-P1164	BSP 51	64
Q62702-P1165	BSP 52	64
Q62702-P1166	BSP 60	64
Q62702-P1167	BSP 61	64
Q62702-P1168	BSP 62	64
Q62702-P1187	SFH 900	220
Q62702-P1188	SFH 905	220
Q62702-P1189	BP 103 B	204
Q62702-P1196	SFH 506-30	212
Q62702-P1197	SFH 506-33	212
Q62702-P1198	SFH 506-36	212
Q62702-P1199	SFH 506-38	212
Q62702-P1200	SFH 506-40	212
Q62702-P1201	SFH 506-56	212
Q62702-P128	SFH 206	196
Q62702-P129	SFH 206K	196
Q62702-P141	SFH 900-2	220
Q62702-P145	SFH 212	196
Q62702-P15	BPX 38	204
Q62702-P15-S2	BPX 38-2	204
Q62702-P15-S3	BPX 38-3	204
Q62702-P15-S4	BPX 38-4	204
Q62702-P15-S5	BPX 38-5	204

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Q62702-P16	BPX 43	204
Q62702-P16-S2	BPX 43-2	204
Q62702-P16-S3	BPX 43-3	204
Q62702-P16-S4	BPX 43-4	204
Q62702-P16-S5	BPX 43-5	204
Q62702-P17-S1	BPX 48	189
Q62702-P174	SFH 309 F-2	208
Q62702-P176	SFH 309 F-3	208
Q62702-P178	SFH 309 F-4	208
Q62702-P180	SFH 309 F-5	208
Q62702-P20	BPX 81	209
Q62702-P2014	SFH 401-4	170
Q62702-P21	BPX 82	211
Q62702-P210	SFH 752	254
Q62702-P211	SFH 234 S	189
Q62702-P212	SFH 244 S	189
Q62702-P215	SFH 229	196
Q62702-P216	SFH 229 F	196
Q62702-P217	SFH 229 P	196
Q62702-P218	SFH 229 PF	196
Q62702-P219	SFH 317 F-2	208
Q62702-P22	BPX 86	211
Q62702-P220	SFH 317 F-3	208
Q62702-P221	SFH 317 F-4	208
Q62702-P222	SFH 303 F-2	207
Q62702-P223	SFH 303 F-3	207
Q62702-P224	SFH 303 F-4	207
Q62702-P225	SFH 317-2	208
Q62702-P226	SFH 317-3	208
Q62702-P227	SFH 317-4	208
Q62702-P228	SFH 303-2	207
Q62702-P229	SFH 303-3	207
Q62702-P230	SFH 303-4	207
Q62702-P231	SFH 309 P-2	208
Q62702-P232	SFH 309 P-3	208
Q62702-P233	SFH 309 P-4	208
Q62702-P235	SFH 309 PF-2	208
Q62702-P236	SFH 309 PF-3	208
Q62702-P237	SFH 309 PF-4	208
Q62702-P245	SFH 309 P	208
Q62702-P246	SFH 309 PF	208
Q62702-P25	BPX 83	211
Q62702-P26	BPX 89	211
Q62702-P263	SFH 250 V	254
Q62702-P264	SFH 350 V	258
Q62702-P265	SFH 450 V	254
Q62702-P266	SFH 750 V	254
Q62702-P27	BPX 65	189
Q62702-P270	SFH 221 S	189
Q62702-P273	SFH 235	196
Q62702-P28	BPX 80	209
Q62702-P280	SFH 452	254
Q62702-P281	SFH 452 V	254
Q62702-P284	SFH 752 V	254
Q62702-P287	SFH 551 V	258
Q62702-P296	SFH 415	174
Q62702-P297	SFH 416	174
Q62702-P30	BPX 84	211
Q62702-P301	SFH 501-2	211
Q62702-P31	BPX 85	211
Q62702-P32	BPX 87	211
Q62702-P33	BPX 88	211
Q62702-P332	SFH 462-K E7800	178
Q62702-P373	SFH 505 A	212
Q62702-P389	SFH 320-2	208
Q62702-P390	SFH 320-3	208
Q62702-P392	SFH 320 F-2	208
Q62702-P393	SFH 320 F-3	208
Q62702-P43-S2	BPX 81-2	204
Q62702-P43-S3	BPX 81-3	204
Q62702-P43-S4	BPX 81-4	204
Q62702-P47	BPX 90	189
Q62702-P48-S	BPX 91 B	189
Q62702-P49	BPX 92	189
Q62702-P51	BPX 79	189
Q62702-P54	BPX 60	189
Q62702-P55	BPX 63	189
Q62702-P71	SFH 202 A	253
Q62702-P73	BPW 34	189
Q62702-P74	BPW 32	189
Q62702-P75	BP 103	204
Q62702-P76	BPW 33	189
Q62702-P768	BP 103-6	204
Q62702-P781	BP 103-5	204
Q62702-P783	SFH 400-2	170
Q62702-P784	SFH 400-3	170
Q62702-P786	SFH 401-2	170
Q62702-P787	SFH 401-3	170
Q62702-P789	SFH 402-2	170
Q62702-P79-S1	BP 103-2	204, 206
Q62702-P79-S2	BP 103-3	204
Q62702-P79-S4	BP 103-4	204
Q62702-P790	SFH 402-3	170
Q62702-P80	BPX 66	189
Q62702-P835	SFH 405	170
Q62702-P836	SFH 305	208
Q62702-P84	BP 104	189
Q62702-P848	SFH 305-2	208
Q62702-P849	SFH 305-3	208
Q62702-P85-S2	BP 103 B-2	204
Q62702-P85-S3	BP 103 B-3	204
Q62702-P85-S4	BP 103 B-4	204
Q62702-P854	SFH 407-3	253
Q62702-P856	SFH 405-2	170

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Q62703-N49-X17	CNY 17 F-1 Opt. 1+7	231	Q62703-Q1031	LD 274	170
Q62703-N49-X6	CNY 17F-1 Opt. 6	223	Q62703-Q1034	LG K380-P	102
Q62703-N49-X7	CNY 17F-1 Opt. 7	224	Q62703-Q1038	LW S260-DO	118
Q62703-N50	CNY 17F-3	223	Q62703-Q1087	SFH 480	180
Q62703-N50-X1	CNY 17 F-3 Opt. 1	229	Q62703-Q1088	SFH 481	180
Q62703-N50-X16	CNY 17 F-3 Opt. 1+6	229	Q62703-Q1089	SFH 482	180
Q62703-N50-X17	CNY 17 F-3 Opt. 1+7	231	Q62703-Q1092	SFH 484	182
Q62703-N50-X6	CNY 17F-3 Opt. 6	223	Q62703-Q1093	SFH 485	182
Q62703-N50-X7	CNY 17F-3 Opt. 7	224	Q62703-Q1095	SFH 487	182
Q62703-N51	4N 32	235	Q62703-Q1316	LR 3360-DG	100
Q62703-N54	CNY 17F-4	223	Q62703-Q1317	LR 3360-F	100
Q62703-N54-X1	CNY 17 F-4 Opt. 1	229	Q62703-Q1318	LR 3360-G	100
Q62703-N54-X16	CNY 17 F-4 Opt. 1+6	229, 230	Q62703-Q1319	LR 3360-FJ	100
Q62703-N54-X17	CNY 17F-4 Opt. 1+7	231	Q62703-Q1320	LS 3360-HL	100
Q62703-N54-X6	CNY 17F-4 Opt. 6	223	Q62703-Q1321	LS 3360-K	100
Q62703-N54-X7	CNY 17F-4 Opt. 7	224	Q62703-Q1323	LS 3360-KN	100
Q62703-N75	SFH 610-1	226	Q62703-Q1324	LY 3360-HL	100
Q62703-N76	SFH 610-2	226	Q62703-Q1325	LY 3360-K	100
Q62703-N77	SFH 610-3	226	Q62703-Q1331	LG 3360-GK	100
Q62703-N80	IL 250	235	Q62703-Q1349	LS 3380-J	101
Q62703-N82	SFH 611-1	226	Q62703-Q1352	LY 3380-FJ	101
Q62703-N83	SFH 611-2	226	Q62703-Q1353	LY 3380-H	101
Q62703-N84	SFH 611-3	226	Q62703-Q1354	LY 3380-J	101
Q62703-N86	CNY 17-1	223	Q62703-Q1355	LY 3380-HL	101
Q62703-N86-X1	CNY 17-1 Opt. 1	229	Q62703-Q1356	LG 3380-GK	101
Q62703-N86-X16	CNY 17-1 Opt. 1+6	229	Q62703-Q1358	LG 3380-H	101
Q62703-N86-X17	CNY 17-1 Opt. 1+7	229	Q62703-Q1359	LG 3380-HL	101
Q62703-N86-X6	CNY 17-1 Opt. 6	223	Q62703-Q1376	LR 5360-DG	107
Q62703-N86-X7	CNY 17-1 Opt. 7	223	Q62703-Q1377	LR 5360-F	107
Q62703-N87	CNY 17-2	223	Q62703-Q1378	LR 5360-G	107
Q62703-N87-X1	CNY 17-2 Opt. 1	229	Q62703-Q1379	LR 5360-FJ	107
Q62703-N87-X16	CNY 17-2 Opt. 1+6	229	Q62703-Q1380	LS 5360-HL	107
Q62703-N87-X17	CNY 17-2 Opt. 1+7	229	Q62703-Q1381	LS 5360-K	107
Q62703-N87-X6	CNY 17-2 Opt. 6	223	Q62703-Q1382	LS 5360-L	107
Q62703-N87-X7	CNY 17-2 Opt. 7	223	Q62703-Q1383	LS 5360-KN	107
Q62703-N88	CNY 17-3	223	Q62703-Q1386	LY 5360-J	106
Q62703-N88-X1	CNY 17-3 Opt. 1	229	Q62703-Q1387	LY 5360-JM	106
Q62703-N88-X16	CNY 17-3 Opt. 1+6	229	Q62703-Q1390	LG 5360-H	106
Q62703-N88-X17	CNY 17-3 Opt. 1+7	229	Q62703-Q1391	LG 5360-GK	106
Q62703-N88-X6	CNY 17-3 Opt. 6	223	Q62703-Q1392	LR 5460-DG	108
Q62703-N88-X7	CNY 17-3 Opt. 7	223	Q62703-Q1393	LR 5460-F	108
Q62703-N89	CNY 17-4	223	Q62703-Q1394	LR 5460-G	108
Q62703-N89-X1	CNY 17-4 Opt. 1	229	Q62703-Q1395	LR 5460-FJ	108
Q62703-N89-X16	CNY 17-4 Opt. 1+6	229	Q62703-Q1396	LS 5460-HL	108
Q62703-N89-X17	CNY 17-4 Opt. 1+7	229	Q62703-Q1397	LS 5460-K	108
Q62703-N89-X6	CNY 17-4 Opt. 6	223	Q62703-Q1398	LS 5460-L	108
Q62703-N89-X7	CNY 17-4 Opt. 7	223	Q62703-Q1399	LS 5460-KN	108
Q62703-Q0575	LY K380-N	102	Q62703-Q1400	LY 5460-HL	107
Q62703-Q0576	LY K380-P	102	Q62703-Q1401	LY 5460-J	107
Q62703-Q0759	LG K380-N	102	Q62703-Q1402	LY 5460-K	107
Q62703-Q0760	LS K380-N	102	Q62703-Q1403	LY 5460-JM	107
Q62703-Q1003	LS K380-P	102	Q62703-Q1407	LG 5460-GK	107

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Q62703-Q1408	LR 5480-DG	111	Q62703-Q1498	LR Z184-CO	121
Q62703-Q1409	LG 5460-H	107	Q62703-Q1499	LR Z185-CO	121
Q62703-Q1414	LS 5480-J	111	Q62703-Q1500	LR Z186-CO	121
Q62703-Q1416	LY 5480-GK	111	Q62703-Q1501	LR Z187-CO	121
Q62703-Q1418	LY 5480-K	111	Q62703-Q1502	LR Z188-CO	121
Q62703-Q1419	LY 5480-JM	111	Q62703-Q1503	LR Z189-CO	121
Q62703-Q1422	LG 5480-H	111	Q62703-Q1504	LR Z180-CO	121
Q62703-Q1423	LG 5480-GK	111	Q62703-Q1505	LG Z180-CO	121
Q62703-Q1428	LS 5420-MQ	106	Q62703-Q1505	LY Z181-CO	132
Q62703-Q1429	LS 5420-R	106	Q62703-Q1506	LG Z181-CO	121
Q62703-Q1430	LS 5420-P	106	Q62703-Q1507	LG Z182-CO	121
Q62703-Q1431	LS 5420-PS	106	Q62703-Q1508	LG Z183-CO	121
Q62703-Q1432	LY 5420-MQ	105	Q62703-Q1509	LG Z184-CO	121
Q62703-Q1434	LY 5420-P	105	Q62703-Q151	LD 242	170
Q62703-Q1435	LY 5420-PS	105	Q62703-Q1510	LG Z185-CO	121
Q62703-Q1439	LG 5410-MQ	105	Q62703-Q1511	LG Z186-CO	121
Q62703-Q1442	LS 5421-Q	108	Q62703-Q1513	LG Z188-CO	121
Q62703-Q1444	LY 5421-NR	107	Q62703-Q1546	SFH 485-1	182
Q62703-Q1447	LY 5421-QT	107	Q62703-Q1547	SFH 485-2	182
Q62703-Q1451	LG 5411-R	107	Q62703-Q1566	LS S269-BO	118
Q62703-Q1452	LS 5380-FJ	107	Q62703-Q1568	LY S260-BO	118
Q62703-Q1453	LS 5380-H	107	Q62703-Q1570	LG S269-BO	118
Q62703-Q1454	LS 5380-J	106	Q62703-Q1608	LG S260-DO	118
Q62703-Q1455	LS 5380-HL	107	Q62703-Q1640	LS S260-DO	118
Q62703-Q1457	LY 5380-H	106	Q62703-Q1642	LU S250-DO	118
Q62703-Q1463	LG 5380-FJ	106	Q62703-Q1657	LY S260-DO	118
Q62703-Q1464	LR B480-BD	111	Q62703-Q1661	SFH 480-1	180
Q62703-Q1465	LR B480-C	111	Q62703-Q1662	SFH 480-2	180
Q62703-Q1466	LS B480-EH	111	Q62703-Q1664	SFH 481-1	180
Q62703-Q1467	LS B480-G	112	Q62703-Q1665	SFH 481-2	180
Q62703-Q1468	LS B480-H	112	Q62703-Q1666	SFH 481-3	180
Q62703-Q1469	LS B480-GK	112	Q62703-Q1667	SFH 482-1	180
Q62703-Q1470	LY B480-EH	112	Q62703-Q1668	SFH 482-2	180
Q62703-Q1477	LG B480-EH	112	Q62703-Q1669	SFH 482-3	180
Q62703-Q1478	LR H380-BD	112	Q62703-Q1698	LG 3330-KN	99
Q62703-Q1479	LR H380-C	112	Q62703-Q1699	LG 3330-L	99
Q62703-Q148	LD 271	170	Q62703-Q1700	LG 3330-M	99
Q62703-Q1480	LS B380-EH	112	Q62703-Q1701	LS 3340-KN	99
Q62703-Q1481	LS B380-G	112	Q62703-Q1703	LS 3340-MP	99
Q62703-Q1482	LS B380-H	112	Q62703-Q1704	LS 3340-M	99
Q62703-Q1483	LS B380-GK	112	Q62703-Q1711	LS 3369-FH	115
Q62703-Q1484	LY B380-EH	112	Q62703-Q1712	LY 3369-FH	115
Q62703-Q1485	LY B380-G	112	Q62703-Q1713	LG 3369-FH	115
Q62703-Q1486	LY B380-H	112	Q62703-Q1714	LS 5469-FH	115
Q62703-Q1487	LY B380-GK	112	Q62703-Q1715	LY 5469-FH	115
Q62703-Q1491	LG K380-EH	112	Q62703-Q1716	LG 5469-FH	115
Q62703-Q1492	LS U260-EO	115	Q62703-Q1726	LS 3380-H	101
Q62703-Q1493	LY U260-EO	115	Q62703-Q1734	LR 5480-E	111
Q62703-Q1494	LG U260-EO	115	Q62703-Q1736	LS 3360-J	100
Q62703-Q1495	LR Z181-CO	121	Q62703-Q1737	LY 3360-J	100
Q62703-Q1496	LR Z182-CO	121	Q62703-Q1738	LS 5421-R	108
Q62703-Q1497	LR Z183-CO	121	Q62703-Q1739	LG 5411-Q	107

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Q62703-Q1744	LS 5360-J	107	Q62703-Q1995	LS 5421-QT	108
Q62703-Q1746	LS 5460-J	108	Q62703-Q1998	LY 3360-JM	100
Q62703-Q1748	LS 3369-EH	111	Q62703-Q2000	LY 5360-HL	106
Q62703-Q1749	LY 3369-EH	115	Q62703-Q2001	LY 5360-K	106
Q62703-Q1750	LG 3369-EH	115	Q62703-Q2002	LY 5380-FJ	106
Q62703-Q1751	LS 5469-EH	115	Q62703-Q2003	LY 5380-HL	106
Q62703-Q1752	LY 5469-EH	115	Q62703-Q2004	LY 5420-Q	105
Q62703-Q1753	LG 5469-EH	115	Q62703-Q2005	LY 5421-R	107
Q62703-Q1755	SFH 484-1	182	Q62703-Q2006	LY B480-H	112
Q62703-Q1756	SFH 484-2	182	Q62703-Q2007	LY B480-GK	112
Q62703-Q1768	LS K380-LP	102	Q62703-Q2008	LG 3360-K	100
Q62703-Q1769	LY K380-LP	102	Q62703-Q2009	LG 3360-JM	100
Q62703-Q1770	LG K380-LP	102	Q62703-Q2010	LG 3330-N	99
Q62703-Q1771	LS K389-FO	103	Q62703-Q2011	LG 3330-LP	99
Q62703-Q1772	LY K380-MO	103	Q62703-Q2012	LG 5360-K	106
Q62703-Q1772	LY K389-FO	103	Q62703-Q2013	LG 5360-JM	106
Q62703-Q1773	LG K389-FO	103	Q62703-Q2014	LG 5460-K	107
Q62703-Q1789	LY 3340-JM	99	Q62703-Q2015	LG 5460-JM	107
Q62703-Q1791	LY 3340-L	99	Q62703-Q2016	LG 5380-J	106
Q62703-Q1792	LY 3340-LP	99	Q62703-Q2017	LG 5380-HL	106
Q62703-Q1799	LY 3340-M	99	Q62703-Q2018	LG 5480-K	111
Q62703-Q1818	LD 274-1	170	Q62703-Q2019	LG 5480-JM	112
Q62703-Q1819	LD 274-2	170	Q62703-Q2020	LG 5410-Q	105
Q62703-Q1820	LD 274-3	170	Q62703-Q2021	LG 5410-R	105
Q62703-Q1865	LG 3360-J	100	Q62703-Q2022	LG 5410-PS	105
Q62703-Q1866	LG 5360-J	106	Q62703-Q2023	LG 5411-NR	107
Q62703-Q1867	LG 5460-J	107	Q62703-Q2024	LG 5411-QT	107
Q62703-Q1868	LG 5410-P	105	Q62703-Q2025	LG B480-H	112
Q62703-Q1869	LG 5480-J	111	Q62703-Q2026	LG B480-GK	112
Q62703-Q1870	LG B480-G	112	Q62703-Q2027	LG K380-GK	112
Q62703-Q1871	LG K380-G	112	Q62703-Q2032	LG 5380-H	106
Q62703-Q1872	LG K380-H	112	Q62703-Q2046	LU 5351-GL	113
Q62703-Q1886	LO 3340-KN	99	Q62703-Q2047	LU 5351-JM	113
Q62703-Q1887	LO 3360-HL	100	Q62703-Q2048	LU B371-FJ	113
Q62703-Q1888	LO K380-LP	102	Q62703-Q2049	LU B371-GK	113
Q62703-Q1917	LD 275-3	170	Q62703-Q2050	LU H371-FJ	115
Q62703-Q1918	LD 275-2	170	Q62703-Q2051	LU H371-GK	115
Q62703-Q1919	LD 275-1	170	Q62703-Q2067	LV S260-DO	118
Q62703-Q1956	LS K382-RU	102	Q62703-Q2123	LP K382-PS	103
Q62703-Q1957	LO K382-RU	102	Q62703-Q2145	LS 3341-KN	99
Q62703-Q1958	LY K382-RO	102	Q62703-Q2146	LS 3341-M	99
Q62703-Q1959	LG K382-RU	103	Q62703-Q2147	LS 3341-N	99
Q62703-Q198	LD 242-2	170	Q62703-Q2148	LS 3341-MQ	99
Q62703-Q1986	LR 5480-CF	111	Q62703-Q2149	LY 3341-JM	99
Q62703-Q1987	LR 5480-F	111	Q62703-Q2150	LY 3341-L	99
Q62703-Q1988	LR H380-D	112	Q62703-Q2151	LY 3341-M	99
Q62703-Q1989	LS 5480-GK	111	Q62703-Q2152	LY 3341-LP	99
Q62703-Q199	LD 242-3	170	Q62703-Q2153	LG 3341-JM	99
Q62703-Q1990	LS 5480-K	111	Q62703-Q2154	LG 3341-L	99
Q62703-Q1992	LS 5480-JM	111	Q62703-Q2155	LG 3341-M	100
Q62703-Q1993	LS 5420-Q	106	Q62703-Q2156	LG 3341-LP	100
Q62703-Q1994	LS 5421-NR	108	Q62703-Q2157	LD 242-LE-7800	170

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Q62703-Q2162	SFH 483-L E7800	182	Q62703-Q2402	LY 5480-L	111
Q62703-Q2163	SFH 483-M E7800	182	Q62703-Q2403	LY 5460-L	107
Q62703-Q2173	SFH 487-1	182	Q62703-Q2404	LY 5360-L	106
Q62703-Q2174	SFH 487-2	182	Q62703-Q2407	SFH 421-P	174
Q62703-Q2185	SFH 482-L E7800	180	Q62703-Q2410	LO 3360-JM	100
Q62703-Q2186	SFH 482-M E7800	182	Q62703-Q2456	LP T670-GK	118
Q62703-Q2201	LO K380-NR	102	Q62703-Q2463	LG K389-MO	103
Q62703-Q2223	LS K380-NR	102	Q62703-Q2464	LP P380-LO	103
Q62703-Q2224	LY K380-NR	102	Q62703-Q2465	LO K380-MO	103
Q62703-Q2225	LG K380-NR	102	Q62703-Q2466	LS P380-MO	103
Q62703-Q2227	LO K380-N	102	Q62703-Q2467	LR 3360-GK	100
Q62703-Q2228	LO K380-P	102	Q62703-Q2473	LO 3340-N	99
Q62703-Q2231	LH 3344-QO	110	Q62703-Q2475	LO T670-J	118
Q62703-Q2233	LH 3364-MOS	110	Q62703-Q2476	LO T670-K	116
Q62703-Q2242	LH 5424-QO	110	Q62703-Q2493	LO T672-P	119
Q62703-Q2244	LH 5464-LO	110	Q62703-Q2494	LO T672-N	119
Q62703-Q2255	LO 3340-M	99	Q62703-Q2502	LS T670-JL	118
Q62703-Q2282	LH T674-L	119	Q62703-Q2503	LO T670-JL	118
Q62703-Q2288	LH T674-M	119	Q62703-Q2504	LY T670-JL	118
Q62703-Q2289	LP T672-M	119	Q62703-Q2505	LG T670-JL	118
Q62703-Q2298	LSG K370-LO	104	Q62703-Q2506	LO 380-KO	102
Q62703-Q2309	LS T670-HK	118	Q62703-Q2513	LS T672-N	119
Q62703-Q2310	LO T670-HK	118	Q62703-Q2515	LY T672-N	119
Q62703-Q2311	LY T670-HK	118	Q62703-Q2516	LY T672-P	119
Q62703-Q2312	LG T670-HK	118	Q62703-Q2517	LG T672-N	119
Q62703-Q2317	LY 3380-K	101	Q62703-Q2518	LG T672-P	119
Q62703-Q2318	LG 3380-J	101	Q62703-Q2529	LOP 370-KN	104
Q62703-Q2319	LY 5380-J	106	Q62703-Q2555	LP T670-H	118
Q62703-Q2321	LG 5411-S	107	Q62703-Q2557	LB 3331-FO	117
Q62703-Q2329	LH T674-KM	119	Q62703-Q2558	LB T670-BO	117
Q62703-Q2330	LS 3340-NS	99	Q62703-Q256	LD 271-H	170
Q62703-Q2330	LO T672-MQ	119	Q62703-Q2617	LH T674-LN	119
Q62703-Q2331	LS T672-MQ	119	Q62703-Q2618	LY T670-H	118
Q62703-Q2332	LY T672-MQ	119	Q62703-Q2619	LP T670-FJ	118
Q62703-Q2333	LG T672-MQ	119	Q62703-Q2620	LP T670-G	118
Q62703-Q2334	LP T672-LP	119	Q62703-Q2621	LS T672-LN	118
Q62703-Q2337	LP K382-R	103	Q62703-Q2622	LS T672-M	119
Q62703-Q2338	LP K382-Q	103	Q62703-Q2623	LO T672-LN	119
Q62703-Q2339	LP K382-P	103	Q62703-Q2624	LY T672-LN	119
Q62703-Q2357	LS T670-J	118	Q62703-Q2625	LG T672-LN	119
Q62703-Q2358	LS T670-K	118	Q62703-Q2626	LP T672-KM	119
Q62703-Q236	LD 261-6	170	Q62703-Q2627	LP T672-L	119
Q62703-Q2376	LY T670-J	118	Q62703-Q2628	LO 3340-MP	99
Q62703-Q2377	LG T670-J	118	Q62703-Q2629	LS 3380-FJ	101
Q62703-Q2378	LG T670-K	118	Q62703-Q2630	LS 3380-HL	101
Q62703-Q2379	LSP K370-KO	104	Q62703-Q2631	LG 3380-K	101
Q62703-Q2380	LSP K372-PO	104	Q62703-Q2632	LY 5421-S	107
Q62703-Q2383	LS T679-CO	119	Q62703-Q2633	LS K382-QT	102
Q62703-Q2384	LY T679-CO	119	Q62703-Q2634	LS K382-R	102
Q62703-Q2385	LG T679-CO	119	Q62703-Q2635	LS K382-S	102
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Q62703-Q2646	LP K382- NR	103
Q62703-Q2647	LSG K372-QO	104
Q62703-Q2648	LR B480-D	111
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Q62703-Q67	LD 261-5	170
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Q62902-B174-F222		127
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Q65210-D250-W5	FP210D250-22	265	Q67000-A5097	TDA 6612-2	13
Q65210-L100-W4	FP210L100-22	265	Q67000-A5103	TDA 5666	17
Q65210-L101	FP201L100	265	Q67000-A5109	TDA 1138	13
Q65212-D2504	FP212D250-22	265	Q67000-A5113	TUA 2009X	12
Q65212-L1004	FP212L100-22	265	Q67000-A5114	TDA 5666X	17
Q65310-L100-U30	FP310L100-30	268	Q67000-A5116	TDA 6051	12
Q65310-L100-U75	FP310L100-75	268	Q67000-A5167	TDA 5670LX-5X	17
Q65312-L100-U	FP 312L100	268	Q67000-A5171	TDA 6130-50	17
Q65412-D250	FP 412 D250	268	Q67000-A5172	TDA 6140-5X	17
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Q65414-L300	FP 414 L300	268	Q67000-A5176	TDA 6130-5X4	17
Q6700-S654	BSP 125	85	Q67000-A524	TAA 765 A	22
Q67000-8237	TLE 4216	20	Q67000-A527	TCA 105	25
Q67000-8298	TDA 4817	26	Q67000-A599	TAA 765 G	22
Q67000-8299	TDA 4817 G	26	Q67000-A6015	PSB 45030-T-V1.2	35
Q67000-A1165	TBE 2335 B	23	Q67000-A6017	PSB 4506-V1.2	35
Q67000-A2017	TAE 1453 A	22	Q67000-A6019	PSB 4506-A-V1.2	35
Q67000-A2106	TAE 1453 G	22	Q67000-A6020	PSB 45030-V1.2	35
Q67000-A2107	TAE 2453 A	23	Q67000-A6024	PMB 2400 T	30
Q67000-A2108	TAE 2453 G	23	Q67000-A6025	PMB 2200 T	30,
Q67000-A2109	TAE 4453 A	24	Q67000-A6028	PMB 2210 T	30
Q67000-A2152	TAE 4453 G	24	Q67000-A6031	PSB 4506-AT-V1.2	35
Q67000-A2210	TAF 2453 A	23	Q67000-A6039	PMB 2312 T	31
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Q67000-A2269	TAF 1453 A	22	Q67000-A6060	PMB 2200 S	30
Q67000-A2271	TAA 762 A	22	Q67000-A6061	PMB 2401 T	31
Q67000-A2291	TCA 305 A	29	Q67000-A6062	PMB 2401 S	31
Q67000-A2305	TCA 305 G	29	Q67000-A6066	PMB 2205 S	30
Q67000-A2321	TCA 785	27	Q67000-A8008	TDA 4210-3	18
Q67000-A2443	TCA 355 B	29	Q67000-A8021	TDA 4918 A	26
Q67000-A2461	TDA 6200	13	Q67000-A8037	TBA 229-2	12
Q67000-A2500	TBC 2332 B	23	Q67000-A8047	TLE 4903 F	19
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Q67000-A5062	TDA 6050X	12	Q67000-A8121	TLE 4203	19
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Q67000-A8210	TDA 6600-2	13	Q67000-H3070	SH 133 C0 116-SO	48
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Q67000-A8238	TLE 4258	21	Q67000-H5060	SDA 3412	15
Q67000-A8239	TUA 2017X	12	Q67000-H5129	SDA 6102-5X	17
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Q67000-A8260	TDA 6611	13	Q67000-H7036	SH 133 C01	48
Q67000-A8290	TDA 4816 G	26	Q67000-H8403	SAE 0530	28
Q67000-A8291	SDA 1812 D	27	Q67000-H8431	SAE 0531	28
Q67000-A8302	TCA 3727	28	Q67000-H8432	SAE 0532 G	28
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Q67000-A8313	TDA 4716 C	26	Q67000-S060	BS 107	84
Q67000-A8323	TDA 4815	26	Q67000-S061	BS 170	84
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Q67000-A9094	TLE 4214 G	20	Q67000-Y639	TDA 4718 A	26
Q67000-A9095	TLE 4263 G	21	Q670000-A2379	TDA 4601	13
Q67000-A9096	TLE 5203	19	Q67000H8743	FZL 4146 G	25
Q67000-A9097	HKZ 121	19	Q67100-A8233	SDA 0812 A	27
Q67000-A9101	TLE 4203 S	19	Q67100-A8310	SLB 0587	29
Q67000-A9108	TLE 4216 G	20	Q67100-A8315	SLB 0587G	29
Q67000-A9109	TLE 4261 S	21	Q67100-A8355	SDA 2812 A	27
Q67000-A9110	TLE 4261-2	21	Q67100-H3032	PEB 2050-P-VB1	34
Q67000-A9114	TLE 4205 G	19	Q67100-H5001	SDA 2526-2	15
Q67000-A9116	TLE 5224 G	20	Q67100-H5002	SDA 2516-2	15
Q67000-A9128	TLE 4260-2	21	Q67100-H5012	SDA 3526-2	15
Q67000-A9140	TLE 4261-2 G	21	Q67100-H5025	SDA 2121-2	18
Q67000-A9141	TLE 4921-2 G	19	Q67100-H5026	SDA 2121-2X	18
Q67000-A988	TCA 105 G	25	Q67100-H5031	SDA 5243-2	14
Q67000-H1948	SAB 0600	28	Q67100-H5042	SDA 5243TR	14
Q67000-H2312	SAB 0601	28	Q67100-H5043	SDA 9088-2	15

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Bestellnummernverzeichnis, alphanumerisch geordnet
Summary of Ordering Codes in Alphanumerical Order

Bestellnummernverzeichnis, alphanumerisch geordnet
Summary of Ordering Codes in Alphanumerical Order

Bestellnummer Ordering Code	Typ Type	Seite Page	Bestellnummer Ordering Code	Typ Type	Seite Page
Q67120-C419	SAB 8032B-P	43	Q68000-A1210	HLMP 2800	138
Q67120-C421	SAB 8032B-16-P	43	Q68000-A1226	HLMP 2700	138
Q67120-C423	SAB 8032B-N	43	Q68000-A1627	HLMP 2600	138
Q67120-C425	SAB 8032B-16-N	43	Q68000-A2285	BC 637	53
Q67120-C427	SAB 8032B-P-T40/85	44	Q68000-A2436	HLMP 2550	138
Q67120-C452	SAB 80C537-N	43	Q68000-A3360	BC 635	53
Q67120-C463	SDA 30161	15	Q68000-A3361	BC 639	53
Q67120-C466	SAB 8031A-20-P	43	Q68000-A3365	BC 636	54
Q67120-C467	SAB 8031A-20-N	43	Q68000-A3366	BC 638	54
Q67120-C471	SAB 8032B-20-P	43	Q68000-A3367	BC 640	54
Q67120-C484	SAB 80C537-N-T40/85	44	Q68000-A3561	PD 2435	155
Q67120-C486	EMOD-C517	44	Q68000-A3562	PD 2437	155
Q67120-C498	SAB-R 3000A-33-AE	45	Q68000-A3867	HLMP 2820	138
Q67120-C499	SAB-R 3010A-33-A	45	Q68000-A4292	DLO 4135	151
Q67120-C500	SAB 80C32-16-P	43	Q68000-A4299	DLG 4137	148
Q67120-C502	SAB 80C32-16-N	43	Q68000-A4312	HLMP 2350	138
Q67120-C508	SAB 80C535-N	43	Q68000-A4315	HDN 1075 O	128
Q67120-C509	SAB 80C535-16-N	43	Q68000-A4317	HDN 1077 O	128
Q67120-C510	SAB 80C535-16-N-T40/85	44	Q68000-A4319	HDN 1105 O	130
Q67120-C520	SAB 80C32-P-T40/85	44	Q68000-A4321	HDN 1107 O	130
Q67120-C527	SAB 80C32-16-P-T40/85	44	Q68000-A4354	DL 1416 B	142
Q67120-C562	SAB 80C535-16-N-T40/85	44	Q68000-A4357	ILD 2	246
Q67120-C581	SAB 80C515A-N-18	43	Q68000-A4358	ILQ 2	246
Q67120-C583	SAB 80C517A-N-18	43	Q68000-A4376	IL 400	250
Q67120-C590	SAB-R 3000A-25-AE	45	Q68000-A4377	ILD 30	246
Q67120-C593	SAB-R 3010A-25-A	45	Q68000-A4378	ILD 55	246
Q67120-C709	SAB 80C32-20-P	43	Q68000-A4379	ILQ 30	246
Q67120-C711	SAB 80C32-20-N	43	Q68000-A4380	ILQ 55	246
Q67120-C722	SAB 80C537-16-N	43	Q68000-A440	OBG 4830	132
Q67120-C725	SAB 80C537-N-T40/85	44	Q68000-A4404	GBG 4850	132
Q67120-C769	SAB 80C517A-N18-T3	44	Q68000-A4408	RBG 4820	132
Q67120-C784	SAB 80C515A-N18-T3	44	Q68000-A4409-F114	YBG 4840	132
Q67120-C835	SAB-C503-LN	43	Q68000-A4444	CGY 40	75
Q67120-D6230	SDA 30C162	15	Q68000-A4468	ILD 610-2	246
Q67120-P176	SAB 82257-N	36	Q68000-A4505	HLMP 2620	138
Q67120-P245	SAB 82258A-1-N	36	Q68000-A4507	HLMP 2450	138
Q67120-P246	SAB 82258A-N	36	Q68000-A4508	HLMP 2720	138
Q67120-P247	SAB 82258A-1-A	36	Q68000-A4825	DL 1416 T	142
Q67120-P248	SAB 82258A-A	36	Q68000-A5017	4N 26	235
Q67120-P249	SAB 82258A-1-R	36	Q68000-A5018	4N 25	235
Q67120-P250	SAB 82258A-R	36	Q68000-A5141	SL 5500	235
Q67120-P311	SAB 82C257-1-N	36	Q68000-A549	BAV 99	51
Q67120-P312	SAB 82C258A-1-N	36	Q68000-A5559	DL 1414 T	142
Q67120-P313	SAB 82C258A-12-N	36	Q68000-A5577	DL 2416 T	142
Q67120-P314	SAB 82C258A-16-N	36	Q68000-A5646	6N 136	243
Q67120-P323	SAB 82C258A-20-N	36	Q68000-A5689	BFR 96S	71
Q67121-C493	SAB 80C166-S	44	Q68000-A5707	4N 27	235
Q67121-C794	SAB 80C166-S-T3	44	Q68000-A5741	HD 1105 R	128
Q67121-C836	SAB-C167-LM	44	Q68000-A5743	HD 1107 R	128
Q67121-C848	SAB 80C166-M	44	Q68000-A5746	HD 1075 O	128
Q67121-C900	SAB 80C166-M-T3	44	Q68000-A5747	HD 1075 R	128
Q67121-C910	SAF-C167-LM	44	Q68000-A5758	HD 1077 O	128

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Summary of Ordering Codes in Alphanumerical Order

Bestellnummer Ordering Code	Typ Type	Seite Page	Bestellnummer Ordering Code	Typ Type	Seite Page
Q68000-A5759	HD 1077 R	128	Q68000-A7320-X1	SFH 601-3 Opt. 1	229
Q68000-A5766	HD 1105 O	128	Q68000-A7320-X16	SFH 601-3 Opt. 1+6	229
Q68000-A5772	HD 1107 O	128	Q68000-A7320-X17	SFH 601-3 Opt. 1+7	229
Q68000-A590	IL 1	235	Q68000-A7320-X6	SFH 601-3 Opt.6	224
Q68000-A5931	IL 5	235	Q68000-A7320-X7	SFH 601-3 Opt. 7	224
Q68000-A5953	CGY 21	75	Q68000-A7321	SFH 601-4	224
Q68000-A5967	RBG 1000	132	Q68000-A7321-X1	SFH 601-4 Opt. 1	229
Q68000-A5968	OBG 1000	132	Q68000-A7321-X16	SFH 601-4 Opt. 1+6	229
Q68000-A5969-F114	YBG 1000	132	Q68000-A7321-X17	SFH 601-4 Opt. 1+7	229
Q68000-A5970	GBG 1000	132	Q68000-A7321-X6	SFH 601-4 Opt. 6	224
Q68000-A5972	ILD 1	246	Q68000-A7321-X7	SFH 601-4 Opt. 7	224
Q68000-A5973	ILD 74	246	Q68000-A7775-T	SFH 6106-1T	242
Q68000-A5974	ILQ 1	246	Q68000-A7776-T	SFH 6106-2T	242
Q68000-A5993	DL-330 M	132	Q68000-A7777-T	SFH 6106-3T	242
Q68000-A5994	DL-340 M	132	Q68000-A7778-T	SFH 6106-4T	242
Q68000-A5995	DL-430 M	132	Q68000-A7779	HLMP 2500	138
Q68000-A5996	DL-440 M	132	Q68000-A7780	HLMP 2855	138
Q68000-A6185	ILQ 74	246	Q68000-A7781	HLMP 2885	138
Q68000-A6346	HD 1075 G	128	Q68000-A7782	HLMP 2300	138
Q68000-A6348	HD 1077 G	128	Q68000-A7783	HLMP 2655	136
Q68000-A6350	HD 1105 G	128	Q68000-A7784	HLMP 2685	138
Q68000-A6352	HD 1107 G	128	Q68000-A7785	HLMP 2400	138
Q68000-A6366	DL 3416	142	Q68000-A7786	HLMP 2755	138
Q68000-A6398	SL 5501	235	Q68000-A7787	HLMP 2785	138
Q68000-A6410	6N 138	235	Q68000-A7820	HD 1131 G	128
Q68000-A6411	6N 139	235	Q68000-A7821	HD 1131 R	130
Q68000-A6433	HDN 1131 O	130	Q68000-A7822	HD 1131 O	130
Q68000-A6434	HDN 1133 O	130	Q68000-A785	LPT 80 A	209
Q68000-A6542	ILD 610-3	246	Q68000-A7851	IRL 80 A	185
Q68000-A6622	BAV 70	51	Q68000-A7871	HD 1133 G	130
Q68000-A7156	DL 1814	142	Q68000-A7872	HD 1133 O	130
Q68000-A7157	DLO 7135	148	Q68000-A7873	HD 1133 R	130
Q68000-A7159	DLG 7137	148	Q68000-A7926	IL 205 T	240
Q68000-A7302	4N 35	235	Q68000-A7927	IL 206 T	240
Q68000-A7303	4N 36	235	Q68000-A7928	IL 207 T	240
Q68000-A7304	4N 37	235	Q68000-A7929	IL 215 T	240
Q68000-A7313	SFH 600-0	224	Q68000-A7930	IL 216 T	240
Q68000-A7314	SFH 600-1	224	Q68000-A7931	IL 217 T	240
Q68000-A7315	SFH 600-2	224	Q68000-A7961	6N 135	243
Q68000-A7318	SFH 601-1	224	Q68000-A7964	PD 3535	155
Q68000-A7318-X1	SFH 601-1 Opt. 1	229	Q68000-A7965	PD 3537	155
Q68000-A7318-X16	SFH 601-1 Opt. 1+6	229	Q68000-A7995	ILQ 5	246
Q68000-A7318-X17	SFH 601-1 Opt. 1+7	229	Q68000-A8000	IRL 81 A	185
Q68000-A7318-X6	SFH 601-1 Opt. 6	229	Q68000-A8024	ILD 5	246
Q68000-A7318-X7	SFH 601-1 Opt. 7	224	Q68000-A8091	DLR 1414	151
Q68000-A7319	SFH 601-2	224	Q68000-A8092	DLO 1414	151
Q68000-A7319-X1	SFH 601-2 Opt. 1	229	Q68000-A8093	DLG 1414	151
Q68000-A7319-X16	SFH 601-2 Opt. 1+6	229	Q68000-A8094	DLR 2416	151
Q68000-A7319-X17	SFH 601-2 Opt. 1+7	229	Q68000-A8095	DLO 2416	151
Q68000-A7319-X6	SFH 601-2 Opt. 6	224	Q68000-A8096	DLG 2416	151
Q68000-A7319-X7	SFH 601-2 Opt. 7	224	Q68000-A8097	DLR 3416	151
Q68000-A7320	SFH 601-3	224	Q68000-A8098	DLO 3416	151

Bestellnummernverzeichnis, alphanumerisch geordnet
Summary of Ordering Codes in Alphanumerical Order

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Notizen

Notizen

Total Quality Management

Qualität hat eine umfassende Bedeutung für uns – über das produktbezogene Verständnis hinaus. Qualität erfaßt jeden, bestimmt die Einstellung zu Kunden und Kollegen, lenkt Denken und Handeln. Unsere Mitarbeiter identifizieren sich mit diesem Qualitätsbegriff. Sie leben ihn in der Entwicklung ebenso wie im Einkauf und in der Produktion oder den Service-Bereichen.

Wir haben unsere Auffassung von Qualität in dem Begriff Total Quality Management (TQM) zusammengefaßt. Damit sagen wir, daß Qualität erarbeitet werden muß – und daß jeder im Bereich Halbleiter dafür verantwortlich ist. TQM heißt also: Alles gleich richtig machen, dabei ständig die Leistung verbessern mit dem Ziel, „Null Fehler" zu erreichen.

In diesem Sinne ist TQM nicht nur eine Verpflichtung uns selbst gegenüber, sondern vor allem ein Versprechen an unsere Kunden: Nehmen Sie uns beim Wort, erwarten Sie mehr von uns!

Quality means many things and everything to us, far more than what is usually associated with an end-product. Nobody can get away from quality, it determines our attitude to customers and colleagues, dictates the way we think and act. Our staff identify with this kind of quality. They live it and feel it, in design and purchasing, in production and serivce.

Our quality philosophy boils down to Total Quality Management (TQM). In this way we want to say that we have to work for quality and that everyone in Semiconductor Group is responsible for it. TQM means doing everything right the first time and constantly improving our performance – the goal is Zero Defects.

So TQM is not only an obligation that we take upon ourselves, it is also a promise to our customers. Take us up on it, expect and demand more of us.

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